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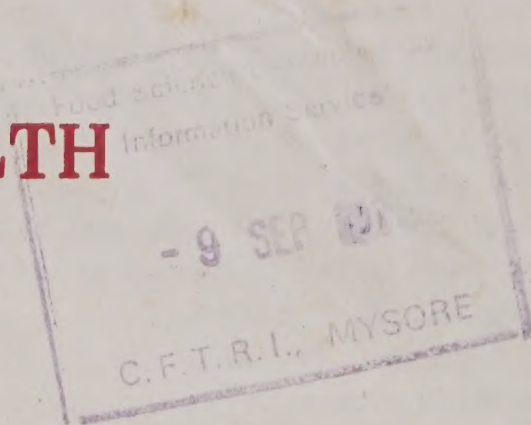
Newsletter

FOOD, NUTRITION AND HEALTH

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By

John E. Thompson



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Americans drink more water than pop according to a feature article by Bill Abrams and John Koten in the *Wall Street Journal*. Soft drinks have long since passed fruit juice in popularity and had edged out coffee in 1975 and milk in 1976. Perhaps they will even overtake water say these authors. Per capita consumption of water was about 53 gallons in 1978 and has been declining for years. The per capita consumption of soft drinks was 36 gallons last year and is projected at 50 gallons by 1990.

Emanuel Goldman, analyst for the brokerage firm Sanford C. Bernstein Co. of New York says that competition is going to be hot and heavy. The largest soft drink manufacturers will be advertising intensively. They expect to spend about \$200 million this year. This will be 40% more than they spent on ads in 1978, and 80% more than they spent two years ago. Mr. Goldman says the major companies were disturbed by disappointing volume growth in 1978 and the increased advertising is a reaction to that.

Editorial comment: It would be heartening to think that the slowdown in soft drink growth was due to a heightened interest on the part of Americans in their health, the avoidance of sugar in excessive quantities, and even the possibility that they might be watching their weight a bit more carefully. A few people may be avoiding the soft drinks containing artificial sweeteners because of the cancer risk. My guess is that a lot of people are simply annoyed by the 35-, 45-, and 50-cent can of pop in the vending machine and are tolerating water as a substitute.

Tougher labeling for Darvon has been voluntarily suggested by its maker Eli Lilly and Co. By applying tougher warning labels and package inserts for its pain killer products the company hopes to avoid having tighter curbs placed on the product by the Food & Drug Administration.

Ralph Nadar's Health Research Group asked that Darvon (propoxyphene) be banned altogether or placed under the strict controls known as Schedule II. In that case a user would have to have a written prescription which could not be refilled without another visit to his physician. Darvon is currently under Schedule IV.

The new warnings will caution users not to take Darvon with alcohol and emphasize that the dosage should not be increased or decreased without a physician's approval. Deaths have occurred when propoxyphene had been consumed in excessive dosages alone or in combination with other drugs or alcohol. None of the reported fatalities however, revealed any instances where death resulted from the use of propoxyphene products in accordance with recommended dosage.

Aspirin poisonings have been reduced by 55% since safety packaging went into effect in 1972 says a report from the Consumer Product Safety Commission (CPSC). Of the reported accidental poisonings 73% were preschoolers.

Dr. Fred J. Marozzi head of CPSC's Product Analysis Branch presented a paper stating that in 69% of instances where children ingested prescription drugs the child was able to open the child-

resistant package. In cases of poison ingested by preschoolers 24% involved child-resistant closures. The children either learned or discovered how to remove the closures. This report reveals that 80% of those children who managed to remove the closure designed to be child-resistant were able to do so in less than 10 minutes.

Aspirin is the most frequently involved drug in poisoning cases in young children. There were instances where the children obtained the substances from packages that were left open. In other cases the child obtained the substance while it was being transferred to another container such as a pill box.

Editorial Comment: Apparently most children are not any more successful at removing the child-resistant caps than their parents. It's evident that some parents annoyed by the trick closures are inclined to leave the cap off or transfer the drug to something easier to operate. This puts the material as available to the child as it was prior to the 1972 regulation. Much as we adults dislike the new closures they are apparently saving children's lives.

A new birth-control device that does not enter into any of the body's metabolic or endocrine pathways was announced by Dr. Robert Goepp, Director of the University of Chicago Zoeller Dental Clinic, and Dr. Uwe Freese a gynecologist. The device is a custom fitted cervical cap incorporating a one-way valve which makes it possible to leave the device in place indefinitely.

The unlikely combination of a dentist and gynecologist is explained by the fact that dental techniques are used in the preparation of the custom impression that is required to make the cervical cap. "We use a material called Alginate made from alginic acid to obtain our cervical impression." According to Dr. Goepp "it is the most common impression material used throughout the world in dentistry. Alginate is inexpensive, easy to work with, accurate if used properly, non-toxic and causes no injury to the patient. It is the material used to replicate the surface of the eye for custom-made contact lenses."

According to leading gynecologists women are increasingly disenchanted with oral contraceptives and the intrauterine devices, both of which are associated with certain medical risks. At least one of the new custom-fitted caps was worn continuously for 22 months without irritation, odors, or any other detectable adverse effects.

Cooking in salt is suggested by Marina Polvay writing in *Cuisine Magazine*. Cooking with salt, that is, incorporating salt into the food, has been present

since the dawn of man. The harmful effect of excess salt in the diet is a comparatively modern diet. Throughout history salt has served as an offering to the gods, a curative agent, a food preservative, and even as a substitute for coin in the realm. Salt is very much a part of the development and evolution of mankind. Most cultures and languages are permeated with superstitions, customs, and sayings related to it says Polvay.

Today's availability of salt at low costs allows experimental cooks to rediscover the benefits of one of the world's most ancient cooking techniques, that of cooking in salt. The salt is prepared as a paste and used to envelope the food to be baked. The "additive three coarse" or Kosher salt is recommended. Meats, fowl, or vegetables are encased in the salt paste coating and then baked. When the coating is broken the salt crust falls apart and reveals a juicy, succulent, entree with a uniquely illusive and delicate taste. The salt does not penetrate the food — not even to the point of replacing subsequent addition of salt for flavoring. Two of the recommended preparations are veal roast and leg of lamb.

GRAS status proposed for cellulose derivatives according to a proposed rule making by the Food & Drug Administration (FDA). Sodium carboxymethyl-cellulose and methylcellulose as direct food ingredients and carboxymethyl cellulose, ethylcellulose, cellulose acetate, and regenerated cellulose as direct human food ingredients will be recognized as generally safe. The status of pure cellulose including microcrystalline cellulose will be addressed in a future proposal.

The scientific literature suggests that an orally administered cellulose and its derivatives pass unchanged through the gastrointestinal tracts of rats and man. Cellulose is of course a major constituent of many foods and such as a significant portion of the human diet.

Editorial comment: Recent interest in fiber as an important constituent of diet undoubtedly increases the demand for cellulose and cellulose derivatives as food ingredients. The inclusion of such materials in otherwise fiber-free foods would improve the level of fiber in the products. Food manufacturers and formulators should be cautioned to study the matter of dietary fiber to determine if cellulose is the way they want to go. The concept of dietary or food fiber has become complex and confusing.

Substitutes for Red -4 in a new process for the production of maraschino cherries featured in *Food Processing* magazine describes the process which varies somewhat from the traditional production

technique.

The color itself is produced from beets that have been especially bred and grown to produce deep colors. As a food dye the best coloring can be blended to produce colors ranging from a bright red hue comparable to Red #2 to a deep rich purple where official colors have been banned for use in coloring maraschino cherries.

Traditionally harvested sweet cherries are preserved, firmed, and bleached in a salt brine containing sulfur dioxide. Subsequently the maraschinos are made by bleaching the pitted fruits in fresh water and diffusing sugar, syrup, and artificial color into the cherries.

In accordance with the modified process the salt brine must be carefully leached from the fruit to make sure of a final sulfur dioxide level less than 30 ppm. The sugar building process is done without color addition. The uncolored cherries are filled into jars and are covered with syrup containing the red color at an appropriate pH. After 3 to 5 days in the container the beet juice coloring diffuses throughout the fruit producing uniformly dyed bright red cherries. Prepared in this manner maraschino cherries have a commercial shelf-life of many months at room temperature and are stable indefinitely at refrigerator temperature.

Laws should seek concert with nature says Dr. F.E. Deatherage, an Ohio State University biochemist. In connection with the Delaney Amendment and other regulations, Dr. Deatherage called for this sort of revision. For example the occurrence of nitrate in certain common vegetables is several times that permitted in cured meats; celery contains up to 2600 ppm, lettuce up to 1400 ppm, radishes 2400 to 3000 ppm, and zucchini squash 600 ppm. Cured meats contain a maximum of 156 ppm nitrite, and bacon 125 ppm. The vegetable nitrate is readily converted in the human mouth and intestines to the nitrite form.

Dr. Deatherage explains that it is this normal production of nitrite which constitutes a natural defense by the human body against botulism spores. Despite the fact that we are exposed constantly to *Cl. botulinum* spores, for some reason these spores do not germinate to active toxin-producing bacteria in the human gut. The evidence is that nitrite produced normally in the intestine is a natural protection just as nitrate in cured meats prevents the growth of these feared bacteria.

CO₂ helps fresh Alaskan salmon reach American markets in a process used by Swift Sure Fisheries, Inc. of Seattle, one of the fastest growing indepen-

dent handlers of fresh and frozen Alaskan fish. In a feature article by Michael S. Veranth of Swift Sure and Karl Robe of *Food Processing* magazine, salmon less than 36 hours out of Northern and Western Alaskan waters are butchered, cleaned, and chilled immediately in 32°F water, cartoned with ice for humidity control, stored in vans containing the modified atmosphere and shipped by sea to Seattle for fresh or frozen distribution.

The modified atmosphere shipment technique could open a whole new dimension to the seafood industry of Alaska according to Neal Todd, President of Swift Sure. Air shipment at about 10c per pound is about double the rate for sea vans, but the vans take 5 to 10 days before unloading in Seattle. Alaskan fisheries have tried shipment of fresh fish in refrigerated sea vans in the past but without satisfactory results.

The modified atmosphere mixture is 60% CO₂, 25% O₂ and the remainder being air. This mixture readily profuses into the shipping cartons. The problem of browning was encountered when humidity was not properly controlled, therefore enough ice is added to each fish carton to furnish needed humidity using the ratio of 90 lb of fish to 10 lb of ice. The vans themselves are air tested for leaks and corked if necessary. After loading, the van is sealed with polyethylene sheeting and air replaced by the modified atmosphere mixture. The CO₂ atmosphere inhibits bacterial growth while the oxygen sustains the low-level respiration that takes place at just above the freezing point of salmon which is 28°F.

The boxed-beef business has its ins and outs. As recently as last December the founder of the Kitchens of Sara Lee, Charles Lubin, and a former president of the company formed a new firm Midwest Quality Beef, Inc. (MQB) based in Chicago. Currently the firm is said to be processing more than 20 carloads of grain fed dressed beef daily. Mr. Lubin made his reputation at the Kitchens of Sara Lee by never compromising on quality. The intent is to carry this idea over into the operations of MQB. In addition the operation is said to be one of the most efficient in the world.

By contrast Stanley B. Kane, President of Kane-Miller Corp. announced the closedown of their boxed beef business, saying that the closedown was due to the unprofitability of the business. The Kane-Miller boxed-beef business accounted for \$297 million of Kane-Miller's total sales of \$959 million as reported in the *Wall Street Journal*. Kane-Miller closed its Chicago beef fabricating plant a year ago and it is now closing its Council Bluffs plant, idling some 800 persons.

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Kane-Miller's exit from the boxed-beef business indicates that despite record high beef prices there is little profit for certain middlemen in the beef industry. The company attributed the demise of its operation to recent cattle shortages. "There's no profit for the meat-packer" says Mr. Richard A. Winfield, treasurer of Kane-Miller "that (situation) could continue for several more months."

Editorial comment: The primary service of the boxed beef business is the provision to buyers of only the cuts they want, rather than requiring them to buy whole carcasses or quarters. The processors buy carcasses from the slaughterer, cut them up and sort the parts into boxes. It is a high volume business concerning many tons of products of high value per pound and yet it is one where microscopic market fluctuations or variation in product yield can make the difference between profit and a disastrous loss. Even when its working well such a business is precarious.

Nutrition should be a theme for the study and practice of medicine according to Dr. Robert E. Olsen, Editor of *Nutrition Reviews*. It would be desirable in 1979 to begin the long overdue serious integration of nutrition into the teaching and practice of medicine. This year is a period of intense interest in nutrition and also a period when the promulgation of nutritional panaceas by various health food promoters, congressional committees, voluntary health agencies, and so-called consumer advocates dominate our exposure to nutrition.

It is essential that the practicing physician be as well-informed about nutrients and nutritional concepts as he is about drugs and pharmacological concepts writes Dr. Olsen. At present the science of nutrition is taught piecemeal in the basic science courses of most medical schools. Almost all medical students today realize their exposure to clinical nutrition is insufficient. Their basic information about nutrition learned in the first two years is not reinforced in their clinical years.

Medical students are confronted with an almost unlimited array of subjects, facts, materials, methods, and principles which they must learn to be successful practitioners of medicine. A student should seek to develop a theme for this study. The development of a theme for the study of medicine protects the student. No one can learn everything about medicine. Practically any biomedical theme will permit the student to absorb the essentials of the basic and clinical sciences and enable him to practice medicine in an intelligent way. The subject

matter of the specialties of medicine could be taken as a theme, for example, cardiology, gastroenterology, hematology, etc. Nutrition has the same potential. The student with an interest in nutrition can convert the study of biochemical pathways from a boring intellectual exercise to an exciting explanation for the pathophysiology of nutritional diseases. Nutritional therapy is now a part of the treatment of practically all chronic degenerative diseases, and it is also needed in the management of diseases requiring agents which interfere with the patients' nutritional status.

The ultimate test of an adequate theme for the study and practice of medicine is that it must apply to and be important in the management of patients. For this reason the final proof of the importance of clinical nutrition must be demonstrated on the wards of our teaching hospitals by people competent in medicine and nutrition. Any physician making casual rounds on a medical-surgical ward will encounter a whole panorama of nutritional problems. Common conditions that require nutritional management will include the cachexia of cancer, the pregnant teenager with megaloblastic anemia, patients with sprue, the alcoholic with pellagra, and many others.

Editorial comment: It can also be observed that many dieticians are not based firmly enough in the fundamentals of physiology, biochemistry and clinical pathology to keep them from passing out gratuitous misinformation. The physician-nutritional team needs development.

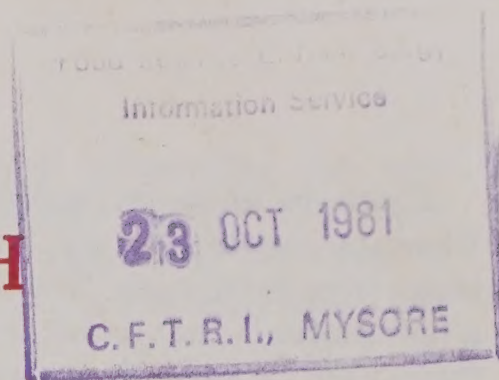
Many refuse to change living habits according to an Illinois study of lifestyles and health. Even though lifestyles play an important part in a person's health, 39% of 600 Illinois residents interviewed recently said that they probably would not change any of their living habits in the next five years to improve their health. This finding came from a study conducted by the Cambridge Survey Research, Inc. for Blue Cross and Blue Shield Associations to determine how aware the public is of the relationship between lifestyle and health.

Survey figures also show that people in higher economic brackets more often rated their health as good to excellent. Those in lower economic brackets usually gave themselves ratings of poor to fair. The purpose of the study was to examine peoples' perception of health and the way it could be affected by their activity and the lifestyle changes they have made or will make to improve their health.

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Bedtime bottle for baby may be linked to tooth decay warns Dr. Lynn A. Ballard of the University of Chicago's Zoller Dental Clinic. Milk, fruit juices, and sweetened beverages used in bedtime bottles can cause extensive tooth decay in infants and young children. "Tooth decay in this age group is very serious," said Dr. Ballard.

The problem is called Nursing Bottle Caries Syndrome. Sometimes all of the 20 primary teeth are infected in children as young as 18 months; although a baby's first set of teeth are temporary they are very important. The primary teeth are needed for chewing and speech development. They also serve as space maintainers for the adult teeth and are essential to proper alignment and development of jawbones.

Parents are sometimes puzzled when one child develops this syndrome while older sisters and brothers in the family who also had bedtime bottles are not affected. The baby may avoid serious damage finishing the bottle before falling asleep and spitting out the nipple and by swallowing vigorously during the night. The child most at risk is the one who sucks on the nipple while he sleeps and swallows less frequently than when awake. The little bit of residual milk collects around the teeth forming a perfect setting for tooth decay.

"The only safe thing to give the baby in a bedtime bottle is plain water; apple juice, orange juice, sugar water and carbonated beverages are equally harmful to children's teeth because they contain natural or artificial sugars," said Dr. Ballard.

Nutrition rivals flavor and convenience according to two reports mentioned in *Food Processing* magazine. A study released by Arthur D. Little, Inc.

emphasizes that successful food products in the next ten or fifteen years must have a nutritional dimension in addition to flavor and convenience. This report predicts that because of a health image, foods like cheese, fish, and seafood will do well whereas jams and jellies will be among those foods whose consumption will remain static or decline.

A study conducted by Yankelovich, Skelly, and White, Inc. issued by *Woman's Day* states that nutrition has become a buzz word in American society. There is a rising interest in proper diet and a desire for more nutrition for the dollar. By contrast however there is a new emphasis on informality, elimination of routine, dogma, social pluralism and focus on the individual. Some of these factors appear to be counterproductive to good nutrition. Some of the barriers to good nutrition were reported as: no time to cook, in a rut about what to cook, and attempting to please the family.

Biomass may yield seven quads of energy in the year 2000 is the report from a conference sponsored by the Institute of Gas Technology (IGT) held in Orlando, Florida. What is a quad anyhow? A quad is a quadrillion British Thermal Units (Btu). Dr. Donald L. Klass, Director of Engineering Advance Research at IGT, noted that the short economics of the marketplace will mitigate against the adoption of Biomass conversion. In the long term the contribution of Biomass will be substantial. There has been a rapid growth in funding of Biomass conversion technology in recent years. The conversion program administered by the Department of Energy (DOE) has grown from \$600,000 to \$26.9 million in fiscal 1979 with projections to \$118.9 million in fiscal 1981.

There is common agreement that fuels from Biomass conversion will be more expensive than those from fossil fuels. The advantage of Biomass as a fuel source is that unlike fossil fuel it is replaceable from year to year. Production of Biomass such as the production of trees to be harvested as fuel is expensive and occupies land that might be used for a higher purpose and takes a substantial amount of time. Conversion of the Biomass into usable energy is another obstacle. Something of a breakthrough has been achieved says Dr. Klass with demonstration of the cellulose pretreatment process in which cellulose is dissolved from wood leaving the lignin. The treated cellulose can be converted to glucose in yields as high as 90%. Anerobic digestion of high moisture Biomass yields a medium energy fuel gas.

Of 132 pilot demonstrations in commercial plants involving the conversion of Biomass in the U.S., 39 are devoted to direct combustion of Biomass, 24 to anerobic digestion, 26 to separation of municipal waste for further treatment and the remainder to a variety of lesser jobs, according to a report appearing in *Chemical and Engineering News*.

Editorial comment: The recovery of Biomass material from municipal waste as a resource of energy appears to be a fruitful pursuit for the next decades. Such recovery would at least prevent the total waste of these materials in landfills and non-productive incineration. Metropolitan areas have to put their organic waste somewhere at present; it does not seem economically feasible to return this organic matter to the agricultural soil. The politics of environmental protection also enters into the situation. Ideally the organic matter of municipal waste would be converted by means of fermentation or chemical conversion to an organic form that might constitute animal feed, hopefully back on the farm where the final product would return to the soil with the concomitant production of meat, milk and eggs for human consumption.

Sex can be addictive according to a London report from a British psychologist Dr. Jim Orford. He puts sex in the same category as drugs and alcohol — too much may be addictive.

Dr. Orford agrees that sex is a perfectly normal activity and open to wide variances in frequency as to what may be termed normal. It's when sex becomes compulsive or excessive that it begins to infringe on the area of human behavior generally regarded as due to addiction. He cites such noted examples as Don Juan, Catherine the Great, Casanova, and Messalina as evidence suggesting that the dependence factor in narcotics and alcohol also ap-

plies to hypersexuality. Dr. Orford is a member of the Psychology Department of the University of Exeter.

Additive-free diets questioned by Drs. J. Preston and C. Mathews in a recent issue of the newsletter *Contemporary Nutrition* as being of benefit to hyperkinetic children. According to the "Feingold Theory" hyperkinesis in children is related to synthetic food additives. Data suggest there is a small group of hyperkinetic children who benefit from an additive-free diet.

Preston and Mathews say that parents are typically attracted to the diet treatment program because of dissatisfaction with other therapies that have been tried. Benefits observed by following the Feingold program are the subjective observations of teachers and parents. Experiments at the Univ. of Pittsburgh and at the Univ. of Wisconsin indicate that objective measurements of the children's behavior were not as favorable as parental ratings. "... it must be emphasized that when data are collected via rigorous experimental designs which minimize potential sources of subjective bias and positive behavioral outcome expectancy, diet-related behavioral changes are much less spectacular than are the impressive clinical case studies or parental testimonials," according to Preston and Mathews. The Feingold hypothesis is that hyperkinesis in children is a toxic reaction to a substance or a substance of low molecular weight. The food substances cited are artificial food colorings, flavorings and salicylates. Clearly further research is needed to determine the extent of additive influence on hyperkinetic children.

Supply and demand governs doctors' fees and health costs according to Keith B. Leffler writing in the *Wall Street Journal*. Contrary to the oversupply scenario nearly all the facts on the market for physicians suggest a market closely regulated by the classic forces of economics says Leffler.

In recent speeches and releases Secretary of Health Education and Welfare (HEW) Joseph Califano has proclaimed that an oversupply of physicians is causing a dramatic rise in doctor's fees and health costs. Secretary Califano argues that the classic laws of economics, of supply and demand do not apply to the health care sector. This lies in the notion that doctors individually control their incomes. When surpluses arise physicians are alleged to simply raise fees and expand demand by prescribing unnecessary surgery, diagnostic procedures, and follow-up visits. Rather than expand services, physi-

cians may simply raise their fees to reach their desired incomes.

In the legislative debate preceeding the 1965 passage of the Medicare-Medicaid programs some 15 years ago discussion centered on the inadequate supply of physicians and the resulting excessive cost of medical care to the aged and poor. Until quite recently the major government concern with the supply of physicians was a shortage believed to be caused by organized medicine's restrictions on medical school accreditation and licensing examinations.

According to Leffler however it is exactly the growing government intervention into this sector that is responsible for the current high costs of health care. Indeed just as spraying a fire with gasoline will douse fire only when the law of physics are repealed, increased government intervention will control health care costs only when the laws of economics are repealed. For example, Federal policy discourages the for-profit hospital in which cost-saving innovations can personally benefit managers and owners in a large way. Similarly reimbursement formulas and tax laws favor the Blue Cross-Shield Plans. Ethical restrictions and state licensing laws limit physician incentives and opportunities to institute low cost health care plans.

Doctors tend to locate where there is a demand for their services. Surgeons and surgical rates will be greater where the people get the sickest — just as diesel truck mechanics may be the most prevalent and highest paid along a new highway that is particularly hard on trucks.

There has been something of an increase in the supply of doctors since 1970 with the result that doctors' income have not kept pace with inflation. Physicians earned relatively less in 1976 than they did in 1970. Leffler points out that this is exactly the response to increased supply predicted by the laws of economics. The cures for our medical cares system should be to assist rather than glove the invisible hand of Adam Smith.

Popeye taught youngsters to eat spinach. Now children may learn the value of a balanced breakfast from such TV characters as Superman, RTD-Two, and the Fonz according to studies by Stamford University Resarchers. Public service announcements (PSA) which are well-produced can carry a direct and simple message and offer personal rewards for appropriate behavior. Where commercials now urge kids to pick up presweetened cereals, the PSA should try to get them to reach for a carrot while passing the produce section. PSAs can be tar-

geted against commercials, advocating the consumption of vegetables or fruit snacks. A TV spot warning of the dangers of sugar may be effective. According to these researchers, the more direct the better; for example, a TV spot that clearly says "do not eat candy" or "do not eat presweetened cereals".

Constant repetition of the same commercial soon makes it lose its effectiveness. Different versions are more apt to attract attention the Stamford people explained.

In this study a group of first, third and fifth grade children were shown one of four versions of a simulated TV program. The first included two candy commercials which made no mention of a balanced breakfast and was the control for comparisons. The second TV program had two typical sugared cereal commercials with the standard disclaimer that such cereal is only part of a balanced breakfast. The third boosted the disclaimer saying "remember that cereal alone is not enough, you need a variety of food." The fourth — by the far the most effective — used two 30-second animated cartoons saying the best way to obtain a balanced breakfast is to eat a variety of foods. After seeing these programs children were asked to assemble appropriate breakfasts using pictures of various foods. They were also shown photographs of several complete breakfasts and were asked which were the most balanced nutritionally. Children who saw the PSA were more likely to select the correct pictures. They were also better able to deal with the concept of substitution. There was a general tendency for the children who saw the PSA to show a better understanding of the elements of a healthy breakfast. According to the researchers Bachen and Roberts "this study pitted 60 seconds of nutrition training against a life-time of commercials; it's remarkable that any effect was obtained at all."

Peach pit fuel tried by the world's largest cannery is a new development at Tri-Valley Growers Plant #7 in Modesto, California. Herald Griffith, Vice President of Engineering and special projects for TVG is quoted as saying "during the packing season our energy cost is approximately \$15,000 a day which translates into 30,720 therms of natural gas; 41,280 therms of oil, and 8,000 therms of electricity per day." In association with this peach pits pose an environmental storage problem. Only limited use has been found for them. The State of California generates about 50,000 tons of peach pits each year. TVG alone has 6,000 tons each season.

Peach pits have the capability of providing 8,500

BTU's per pound so they have the capability of providing a fuel source. Other waste products potentially available for fuel included olive pits, cherry pits, and walnut shells.

In the TV setup, the fruit pits are ground fine and conveyed to a storage tank from which they are drawn by a blower system to a burner in the company's boiler. Up to 80% of the boiler's fuel requirements can be supplied by the peach pits, with 20% to be supplied by natural gas or oil. This particular boiler has a 60,000 pounds per hour steam capacity. The boiler modification costs \$430,000, but the fuel value of the pits amounts to \$244,800 per year.

Editorial comment: The burning of biomash as fuel should be very critically examined for its long-term effects on our nation's agriculture. In order to maintain tilth, soil requires an enormous amount of slowly degradable organic material. Originally it was believed that the nutrient requirement of agriculture could be met by the NPK system — nitrogen, phosphorus and potash. A bit later it was determined and acknowledged that a number of minerals were also essential. Yet to be recognized is the tremendous need for carbon. Preferably this would be in the form of organic matter containing a variety of compounds ranging from those with a very short life to almost indestructible lignin. I would sincerely hope that in the near future the incineration of organic wastes would become unthinkable — in sharp contrast to those who advocate the gathering of agricultural crop residues for use as fuels.

Less refrigerants in the atmosphere could be the outcome of a forum "Recycling of Refrigerants" held in conjunction with a meeting of the American Society of Heating, Refrigeration and Air Conditioning Engineers (ASHRAE) in Philadelphia. Most refrigerants are fluorocarbons, a class of compounds suspected of damaging the ozone layer of the stratosphere. The ozone protects us from excessive exposure to ultraviolet radiation.

According to figures published in *Air Conditioning, Heating and Refrigeration News*, some 74 million pounds of refrigerants were estimated to originate from automobile airconditioners in 1976-77. All other sources, including residential and commercial air conditioners and industrial refrigeration systems, accounted for 29 million pounds. By 1990 these figures are estimated to reach 114 million pounds from automobiles and 34 million pounds from other sources. Obviously the automobile segment of the industry represents the greatest oppor-

tunity for improvement but may be the most difficult to take advantage of.

Refrigerant is usually a minor part of a repair to an automobile system and the work is done in thousands of different shops. These would be difficult to persuade or require to reclaim refrigerants even if the necessary equipment was available. Commercial systems are usually serviced by professional specialists; the individual quantities are larger and the economic feasibility is better. One ASHRAE member reminded his colleagues that refrigerants used to be reclaimed and reused back in the 1930's . . . why not again?

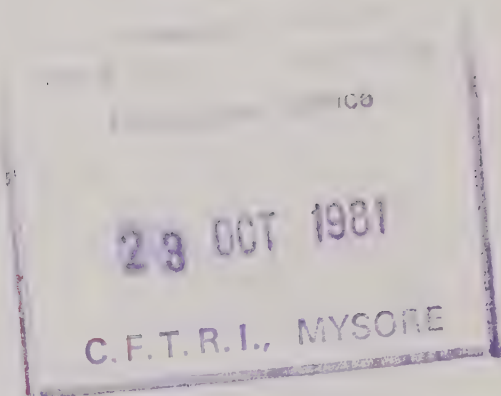
Energy conservation may harm the elderly says George A. Sacher, a senior biologist at the Department of Energy's (DOE) Argonne Laboratory. Elderly persons are susceptible to hypothermia, a loss of body heat. Older people are probably less able to reflexively shut down peripheral blood flow by contraction of muscle fibers in the vessel walls. This reflex capacity which can decrease body heat loss weakens with age. Oldsters become increasingly sensitive to cold. A sudden loss of body heat can cause hypothermia. In extreme cases the victim becomes stuporous, comatose or may die.

As the cost of heating a home increases and "patriotic" pressure is applied to conserve energy, elderly persons on fixed incomes may be tempted to reduce their fuel consumption to a dangerous level and increase the risk of hypothermia. Proper home insulation, storm windows, caulking and sealing off of unused parts of the home in winter are some of the means of saving fuel without lowering the thermostat.

Dr. Donald Kennedy is leaving the Food and Drug Administration. After two years as Commissioner of the Food & Drug Administration (FDA) Dr. Kennedy is going back to Stanford University where he had been a Professor to assume an administrative post. The timing of his move has raised eyebrows. Is it possible that he is trying to beat the June 30 deadline? That is the effective date of a new ethics law forbidding former government employees who move back to private life from interceding with the government for contracts and other business. Stanford gets a lot of government contracts. When FDA aides were contacted they denied any connection. If there was any connection it would only demonstrate that Health, Education, and Welfare Secretary Califano was correct in saying that the new ethics provision will drive good men from government positions.

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The U.S. Supreme Court has dealt a lethal blow to laetrile. In a long-awaited decision the Supreme Court has upheld the authority of the Food & Drug Administration (FDA) to ban laetrile from interstate commerce although laetrile is legal for use in several States. None of these States has manufacturing facilities to make laetrile. As a consequence it is not likely that persons wishing to have laetrile treatment in the "legal" States will be able to get the questionable drug.

The court opinion was that the FDA had the unquestionable legal right to ban drugs from interstate commerce that are not demonstrated to be safe and effective. FDA's Dr. Kennedy has consistently stated that he did not feel that laetrile was effective. Perhaps this action by the Supreme Court will put the issue to rest.

Hospitals will out-think and will out-last government regulators in the courts according to Alex McMahon, President of the American Hospital Association. The hospital group will continue to fight unfair government regulations in the court whenever necessary. McMahon said at times the only friend hospitals have today seems to be the law.

Peter Libassi who recently resigned as General Counsel of the Dept. of Health, Education and Welfare (HEW) said that HEW is being pressured into writing further regulations despite its attempt to deregulate. Libassi is quoted in *Hospital Week* as saying that social controversy has politicized health care issues leading to increased legislation, regulation, and litigation.

Food stamp myth is dispelled by two studies. The myth seems to be that a lot of people on food stamps hold up lines in grocery stores by buying

high-priced steaks and snack foods and then drive away in high-priced cars to homes in the suburbs. A U.S. Department of Agriculture study shows that two-thirds of the families using food stamps do not own a car at all. Only 29% own their own homes and these are valued at less than half of the homes of other families. Sixty percent have absolutely no savings; by contrast only 9% of other families have no savings. These data on assets were drawn from the U.S. Census Bureau survey of Income and Education, and the Bureau of Labor Statistics Consumer Expenditure Survey.

An interview with a food stamp recipient reported in *Food and Nutrition* stated "with food stamps I can buy more. I can buy varied foods," says Beverly Alexander a retired nurse living in Richmond Virginia. "Food stamps are a big help when you are living on a fixed income and food is so expensive; I think more older people should use them." Apparently many older people do not take advantage of food stamps because they feel that they are charity. Alexander sees food stamps as something returned for taxes paid out in younger years.

Changing life styles in the European economic community have led Frost & Sullivan, Inc. to forecast growth for the frozen food industry in Europe. Their 260 page market analysis indicates that the market should continue to grow through 1987.

About 50% of all the frozen foods sold and consumed in the eleven nation European Economic Community (EEC) comprised vegetable and potato products. About two-thirds is marketed through retail outlets and one-third to catering establishments. The EEC has an estimated total of 820 frozen food processors in contrast with 20,000 in the U.S.

Israeli surgeons use a CAT scanner in brain operations. CAT is medical jargon for computerized axial tomography. It is a type of X-ray machine that emits a thin beam of X-rays as it moves round and round the body. Detectors record how the X-rays are blocked or weakened by the bones and organs, and a computer then constructs a highly detailed picture of a thin cross-section of the body. The report by the Israeli doctors in the *Wall Street Journal* describes using a CAT scanner as an integral part of brain surgery. Operations were done at Beilinson Medical Center at Petahtikba by a team headed by neurosurgeon Dr. Mordechai N. Shalit of Tel Aviv University Medical School.

Editorial Comment: CAT scanners have come into disrepute. They cost a lot of money — from \$250,000 to \$500,000 or more. A typical scan costs a patient or his insurer about \$200. It has been said by consumer advocates that hospitals have installed CAT scanners just to be stylish and once installed they persuade doctors to order unnecessary examinations in order to support the large investment. The one CAT scanner known to your editor seems to be performing a very useful service in the identification of tumors and the diagnosis of complex injuries. The neurosurgeon at this facility has remarked "I don't know what I ever did before we got a CAT scanner." By comparison with traditional X-ray pictures the CAT scanner is a modern miracle.

Homocysteine may be the chemical basis for arteriosclerosis, according to the doctors at the Harvard Medical School. Arteriosclerosis including the kind found in coronary heart disease is the most common cause of death in America, significantly more so than cancer and accounts for about half the deaths each year.

Conventional treatment is based on risk factors such as high cholesterol diets, hypertension, smoking, lack of exercise and so forth. Dr. Kilmer McCully at Harvard is a proponent of the new idea which suggests that homocysteine is the cause of arteriosclerosis.

Methionine one of 20 amino acids that constitute the protein we eat is metabolized into homocysteine a very toxic substance. In normal healthy people the homocysteine is further metabolized into cystathionine. This is in turn used up in other bodily biochemical reactions. The conversion of homocysteine to cystathionine depends upon the presence of vitamin B-6. This vitamin is a key to the clearing of homocysteine from the blood. The

theory which holds promise but is yet not completely proven is that most of us in the United States eat too much protein and not enough vitamin B-6. Available evidence suggests that 10 milligrams a day of vitamin B-6 would be more likely to give a protective margin than the government suggested 2 milligrams per day. This level would require vitamin supplementation since it is difficult to obtain this much in a normal American diet. Excess intake of the vitamin is rapidly excreted. The toxic dose of the vitamin is more than a thousand times greater than the 10 milligrams per day.

Dig up the garden and haul it away. This is the essence of a demand by the Citizens for a Better Environment (CBE) a Chicago based environmental group. CBE has initiated a law suit to force the U.S. Environmental Protection Agency (EPA) to have all the gardens removed that use the Nu Earth fertilizer program offered for several years by the Chicago Metropolitan Sanitary District. The group contends that Nu Earth sludge material, could have dangerously contaminated the soil and represents a hazard that could linger for hundreds of years. CBE biochemist Dana Davoli charged that some of the gardens are the equivalent of a hazardous waste sight. The contention is that Nu Earth contains dangerous quantities of the element cadmium which is readily taken up by root crops and leafy vegetables. Cadmium is said to be linked to kidney damage, tumors, and chromosomal damage. The effect is cumulative since the chemical is not eliminated from the body according to Mrs. Davoli. A spokesman for the Metropolitan Sanitary District called the CBE charges frivolous.

Editorial comment: A good friend and business associate who read this item in a Chicago newspaper was prompted to pass this comment: I have used milorganite (the Milwaukee equivalent of Nu Earth) since I first had a garden in 1931. If it's that deadly I should be dead. Our neighbor was in the business of packaging sludge in Sears fertilizer bags to the extent of hundreds maybe thousands of carloads that should have been enough to poison a considerable number of people. Then how about the millions of Chinese who for thousands of years have been eating vegetables grown in this sort of stuff. Ridiculous!

People want more food ingredient labels according to a survey conducted by Response Analysis Corp. of Princeton, N. J. The survey was ordered by the Food & Drug Administration as background

for a program to increase and standardize the information that Americans are given about their food.

The survey firm found consumers want all food product labels to contain a list of ingredients. At present some products are made in accord with a basic FDA defined recipe and are not required to print the ingredients on the label. In addition the survey revealed that consumers want to know more about calories, sugar, cholesterol, and written in simple language.

Are we ready to evacuate? If a disaster strikes are our hospitals and nursing homes ready to evacuate patients and residences to a safe area? The accident at the Three Mile Island Nuclear Reactor Plant and the derailment of a freight train carrying dangerous chemicals have forced hospitals and similar institutions nationwide to reevaluate their disaster programs.

Most hospitals think in terms of evacuating to the hospital not from it, according to Arnold Muller director of the Emergency Care Unit at the Milton S. Hershey Medical Center Hospital of Pennsylvania University. The Three Mile Island incident quickly indicated that there is an ever existing possibility that it might be necessary to evacuate patients from health care facilities. The Hershey Medical Center happens to be located only 8 miles from Three Mile Island.

It's also likely that hospitals in the area around Three Mile Island were really unprepared to handle a large number of seriously injured patients contaminated with radiation had this sort of accident occurred. Most hospitals are prepared for more common disasters, tornadoes, or a bus crash but not for large scale radiation accidents.

The Nuclear Regulatory Commission requires each of the 72 Nuclear Reactors in the country to establish a decontamination program at a nearby hospital. The Hershey Medical Center was the designated program center for Three Mile Island but Hershey might have been one of the first required to evacuate. More than one hospital near a reactor should have a decontamination facility according to Ben Brostein of Hershey Medical Center. Decontamination itself is a relatively simple procedure, but its effective practice requires training and special equipment.

A billion dollars in revenue but not a dollar of profit for Food Fair, Inc. which has been operating under Chapter 11 of the Federal Bankruptcy Act. The firm posted a net loss of \$117 million on revenue of \$1 billion for the 28 weeks ended Feb. 10 according to a *Wall Street Journal* report. Food

Fair currently operates some 215 supermarkets. A Food Fair spokesman said that continuing operations aren't expected to be profitable during the summer. He cited intense price competition.

In a recently heard radio interview a Wall Street expert on the supermarket industry spoke of the return of Papa/Mama stores. He likened the large supermarket to the dinosaurs who became extinct when they become so big and clumsy that they could not protect themselves from even small predators.

Editors comment: It will be interesting to see what the long run effect of a gasoline shortage has on food marketing. From the consumer's point of view will it be effective to make one automobile trip to a supermarket having all sorts of groceries, quite a bit of hardware, and almost all drugstore requirements or will family shoppers choose to go on foot to small neighborhood markets. It's hard to predict.

Health and Fire Protection Officials advocate cigarette research which would produce a cigarette that does not keep on burning if the smoker leaves it unattended. Officials of the American Fire Protection Association and the American Burn Association announced plans to try to convince tobacco companies to make such cigarettes. They believe that this would reduce the more than 3,000 deaths each year attributed to fires started by cigarettes.

Andrew McGuire, executive director, of the Burn Council in San Francisco says "studies show that a cigarette has to lie burning on a rug or piece of furniture for at least 10 to 20 minutes before it will start a fire. He believes it would not be difficult to make a self-extinguishing cigarette.

Cigarette companies do not agree. A spokesman for R. J. Reynolds says that they have already tried to do this in the form of the More cigarette. We have lost more than a few customers because More doesn't stay lit according to the tobacco spokesman. Currently manufactured cigarettes contain ingredients purposely added to make them burn longer.

Lipton to acquire Lawry's Foods, Inc. for \$66.2 million. Thomas J. Lipton, Inc. is a unit of the Anglo-Dutch Unilever Group. Terms call for payment of \$43.75 per share for Lawry's outstanding 1.5 million common shares.

Richard N. Frank, President of Lawry's, and members of his family hold 44.5% of the company's shares and they have agreed to the merger. Lawry's makes bottled seasonings, packaged seasonings, and sauce mixes. Besides tea Lipton pack-

ages soup mixes and other food products.

Editorial comment: Mr. Frank once explained personally to yours truly that the name Lawry's came from his father's name Lawrence Frank. When Mr. Frank wanted to open a restaurant in California he didn't think that the name Frank's Place was classy enough, the name Lawrence itself seemed a little clumsy so the name became Lawry's. Aside from being a very successful restaurateur, Mr. Frank developed the seasoned salt which was and is one of the company's leading products.

Flu isn't always the flu according to Dr. David S. Fedson of the Dept. of Medicine at the University of Chicago. Many people confuse common gastrointestinal problems with influenza. Dr. Fedson explained that the word flu is used often to refer to any illness that is either respiratory or gastrointestinal. Most gastrointestinal attacks are unrelated to influenza.

Early on in a true influenza attack most people will have a runny nose, sore throat, headache, and muscle aches. After one or two days these symptoms begin to subside and the patient may begin to feel respiratory symptoms such as wheezing and coughing. There may be substantial amounts of discolored sputum. Pain under the breast bone due to inflammation of the trachea is fairly common. Patients with heart and lung disease, kidney conditions and diabetes account for most of the deaths which accompany epidemics of influenza. An ordinary epidemic of the flu may cause 15,000 to 25,000 deaths in the United States. Dr. Fedson feels that it is important that those people with high risk conditions be immunized. It is difficult if not impossible to predict when an influenza epidemic will occur. Last year in Chicago we had the A-Texas influenza strain circulating in December and January. The flu in the late February and March period was caused probably by the A-Russia virus. So there were exactly two waves of influenza last year.

Carter keeps pushing for hospital costs containment. He has brought up the subject several times recently in speeches and in briefings. He points out that costs in hospitals double every five years. Almost twice the national level of inflation, and "if you bought an average priced car in this past 12 months, \$120 of that automobile cost would go to pay hospital insurance for the workers who built it." With the federal wage guideline apparently crumbling into dust every time they encounter a powerful union it isn't surprising that

the hospital cost containment idea is being shaken a bit too. The Senate Finance Committee has added a sunset provision to the administration hospital cost containment proposal putting a five year termination date on the bill unless Congress acts to extend it. The Committee also approved exemptions for hospitals in States that have acceptable cost containment programs. The committee voted to set cost containment limits high enough to permit wages for nonsupervisory personnel to maintain parity with existing wage structures. This was intended to ensure that lower paid workers were not treated unfairly a Committee spokesman said.

Editorial comment: Ordinarily price is regulated by demand. The hospital costs are insulated from the demand you and I as potential patients exert on hospitals. Practically all of hospital revenue comes from third parties not from direct payment by the patients. Insurers have no real incentives to reduce hospital costs since their own revenue and administrative costs are geared to the amount of money they pay out as reimbursement to the hospital. The more they pay out the more they have to work with.

There is another layer of insulation mentioned in President Carter's remark. The premiums paid for providing hospital insurance for many American workers are a matter of union contracts. When the insurance premium goes up most employers under such contracts have no choice, they must pay the increased costs.

You and I are not lily-white either. When we must go into the hospital we realize that most of our expenses are covered by some form of insurance. We insist on nothing but the best. We want any and all tests that may help us. Cost is no object, and our personal ability to pay at that time is not important. The physician attempts to protect himself by agreeing too and prescribing all sorts of diagnostic tests and laboratory procedures. He is afraid that we will sue him for malpractice if he does not make use of any modern technique available. Who is to blame for high hospital costs? The answer is not simple. The solution to the problem will not be simple either.

Pasta products have a changed image due to the addition of protein and lysine. New high nutrition engineered foods are reported in a feature article in *Food Engineering*. The improved macaroni products contain not only the traditional semolina but about 18% of added protein and flavor enhancers. One manufacturer uses sodium caseinate derived from milk. Soy protein is used by another.

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Newsletter

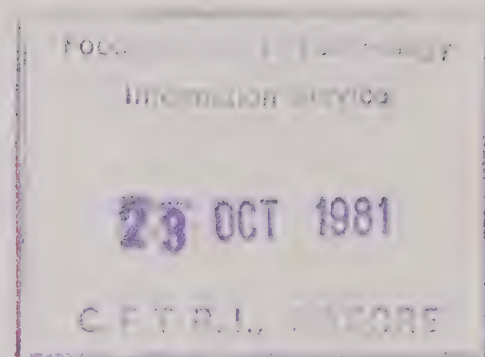
FOOD, NUTRITION AND HEALTH

By

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Infection may profoundly affect nutritional status — there is a synergistic relationship between malnutrition and infection. Infection worsens nutritional status and in a vicious downward cycle makes the host individual more vulnerable to infection according to a recent review in *Nutrition & the M.D.* It is pointed out that until recently more attention has been paid to infection defensive mechanism in malnourished subjects than in the adverse effect of infection itself on nutritional status.

Severe infection is usually accompanied by nutritional and metabolic responses. During and after infection there is an increased need for amino acids to make proteins involved in the inflammator and immune responses and for tissue repair. Provision of full nutritional support would be a giant step forward. Adequate calories, proteins, fluid, minerals, trace elements and vitamins must be supplied to the infected patient to expedite his recovery. Traditional practices in feeding the sick are often governed by cultural beliefs which may cause protein and calorie-rich foods to be withheld from patients with infection. Fever increases metabolic rate and caloric requirement. There may be abnormally high losses of nutrients during illness resulting from perspiration, diarrhea, vomiting, ileus, and malabsorption or draining wounds or fistulas. Adequate calories, protein, fluids, minerals, trace elements and vitamins must be supplied to the infected patient. This is most crucial in the rapidly growing fetus, newborn, and infant.

Patricia Harris replaces Joseph Califano to become the 13th Secretary of the Department of Health, Education and Welfare (HEW), the government's largest agency.

It's much too soon to know what Ms. Harris has

in mind for HEW. In a private conversation with a knowledgeable follower of HEW affairs my informant suggested that we not look for any drastic changes in the undersurface workings of the department. Ms. Harris like Califano is a lawyer. Lawyers tend to demand that things be black and white with no shades of grey. You, your policy, your product or your proposition will tend to be viewed as good or bad. You are guilty or innocent; there is no-in-between.

On the surface Ms. Harris is expected to be more stately, less out-spoken but no less a powerful advocate of stricter government regulation of foods, drugs, and health care products.

Abuse of amphetamines has led to a crackdown. The Food & Drug Administration (FDA) has moved to ban amphetamines as diet pills. Once considered by FDA to be safe for use to control weight the agency now concludes that their abuse is a public health hazard. Amphetamine has the highest rate of abuse of all the anorectic drugs especially among 18 to 25 year-olds. Of 3.3 million prescriptions for amphetamines in 1978, 80 to 90% were written for dieters.

A \$500 million market for protein ingredients very soon is projected in a report by Frost & Sullivan, Inc. Faced with mounting pressures to cut ingredient costs, extend shelf-life, improve nutritional qualities, the food processing industry has created a burgeoning market for food protein ingredients states a Frost & Sullivan release.

The protein ingredient market totaled \$403 million in 1977 and is projected to climb to \$495.8 million in 1980, \$594.5 million in 1983, and 701.9 million in 1986. Soybean proteins are the most

important part of this market amounting to a 60% share of the 1977 sales. Whey proteins captured 33% and yeast 7%.

These proteins are not universally accepted by the consuming public according to the F&S study. Their use as meat extenders connotes inferiority to some consumers. This is in spite of the fact that soy-meat blends frequently have higher organoleptic qualities than all-meat products. An exception to the dim view is the favorable consideration accorded bakery and cereal products supplemented by protein ingredients.

The marketing of protein ingredients as consumer products has been disappointing. Consumer products made as substitutes for conventional protein foods such as bacon bits, bacon and sausage analogs, and so forth have failed to meet original market projections. The market for meatless analogs stood at \$28.00 million in 1977 and is targeted for \$35 million in 1986. Mixtures of soy with beef in supermarkets had a temporary acceptance in 1973 during a beef price in supermarkets had a temporary acceptance in 1973 during a beef price upsurge but virtually disappeared from the retail market as demand gradually softened. Current high beef prices could justify re-introduction. Improved quality of the present day products may win a permanent place in the minds of consumers this time around.

Aquaculture is still a small business writes Carol Haddix in the Chicago Tribune. Current figures show aquaculture reaps 6.5 million tons of fish a year compared to 64 million tons of captured fish. H.R. Schmittou, Director of the International Center for Aquaculture at Auburn University in Alabama told Ms. Haddix not to look for aquaculture to feed the world anymore than potatoes or rice could, but in the next 30 years we'll be producing as much fish through farming as we do from commercial fishing.

In the hands of the Lummi Indians of Puget Sound trout and salmon grow ten times faster than those in the wild, and the protein produced per acre of fish is 20 times that culled from pastured cattle. Thus the Lummi are practicing a form of aquaculture. The Indians raise fish and oysters on inexpensive fishmeal in a project that has tripled the Indians per capita income in the process.

Aquaculture has been a small-scale industry in Japan for centuries. Farmers cordoned off an ocean cove to grow oysters. Today some large corporations, utilities and even governments are looking into the possibilities.

The trout industry is one of the oldest commercial

aquaculture ventures in this country. Because of dwindling supplies it is now illegal to commercially fish trout. Aquaculture now supplies America with their total supply of frozen rainbow trout. The quality is reported to be even superior to the wild caught fish and have a more consistent taste according to Michael Miller, Vice President of Sales for the Clear Springs Trout Company of Beuel, Idaho. The captive fish are fed a high protein food made from fishmeal, soy, grains and vitamins. Trout require a great deal of flowing water and this is why most of the commercial trout farms are located in Idaho and other Western states where mountain streams provide the ideal water conditions.

Catfish can be raised in smaller ponds but they need warmer temperatures so that catfish ranchers tend to be found mainly in the Southern states like Mississippi and Alabama.

There is an interest too in unromantic species like carp and a tropical fish called talapia. These are the most economical to produce because they are at the bottom of the food chain. They eat inexpensive plankton or even manure. These are the rabbits of aquaculture while shrimp, bass, and salmon are the tigers. While the tigers often need special attention, talapia, catfish, and carp usually need only simple ponds. Crawfish is another economical creature to raise through aquaculture because it survives flooded rice fields. After the rice crop has been removed the same fields can be used for raising the tiny lobster-like crustaceans which feed off of the rice stubble.

There is an opportunity for an interesting relationship of industry to aquaculture. Nuclear energy plants and even coal generating plants often produce a great quantity of warm water. This can be channeled to provide a nice warm atmosphere for fish which grow much faster than in cold water.

Salmon ranching is one of the more interesting if not more risky aspects of aquaculture. Salmon are migratory then can not be kept in one pond but must be released into the ocean. One company has developed huge hatcheries and holding areas for coho, chinook, and chum salmon. The small fish are held for a time in areas that look like giant swimming pools where they are fed, vaccinated, and kept until the right size to survive in the ocean. When released into the ocean they are subject to natural enemies including fishermen but a scattered few will survive to return to their pond home in one to four years where they are then netted for market. One spokesman says that if as many as one in a thousand of the small fish released returns the operation can be considered a success.

American dietary goals are a shifting matter. It has been noted by many nutritionists that there has been a significant moderation in the *dietary goals for the United States* originally announced by Senator George McGovern in January 1977. The editors of *Science* noted this in a commentary. The prescription for what the public should eat to avoid the "epidemic of killer diseases" such as diabetes, stroke, and cancer is the *dietary goal*. This called on Americans to increase their consumption of fruits, whole grains, poultry, fish, skim milk, and vegetable oils and to cut their consumption of whole milk, meat, eggs, butterfat and food high in sugar, salt, and fat.

More specifically the original version asked consumers to (1) increase carbohydrate consumption to account for 55 to 60% of caloric intake (2) reduce overall fat consumption from approximately 40 to 30% of energy intake (3) reduce saturated fat consumption to account for about 10% of total energy intake and balance that with polyunsaturated and monounsaturated fats which should account for about 10% of energy intake each (4) reduce cholesterol consumption to about 300 milligrams a day (5) reduce sugar consumption by about 40% to account for about 15% of total energy intake, and (6) reduce salt consumption by about 50 to 85% to approximately 3 grams a day.

Health food fans loved the prescription while certain food associations were furious. Pressure was brought to bear by the likes of the cattle industry in Senator McGovern's home state of South Dakota. Senator McGovern seems to be changing his tune a bit. In December 1977 a Second Edition of dietary goals appeared which instead of asking consumers to eat less meat it was now recommended that people should reduce their intake of animal fat and choose meats, poultry, and fish which would reduce saturated fat intake. The new Edition also removed the advice about reducing whole milk and egg consumption of young children and young adults. It also raised the suggested limit for salt which had been 3 grams a day to 5 grams a day. In fact McGovern told the Salt Institute 5 grams a day referred only to the salt used by choice and did not include the nondiscretionary salt already present in purchased foods. Hence the limit on salt intake has increased to 8 grams a day.

Still other industry pressure appears to have been brought on Mr. McGovern. He and his staff recently came out with kind words for Ronald McDonald, Taco Bell, A&W, Tastee-freeze, and the like saying that "on the whole quick foods are a nutritious addition to a balanced diet."

Editorial comment: Surely this is not the first time that it has been possible to document crawfishing on a policy by a politician. Eating still remains one of the most important, most interesting, and most satisfying occupations of the human animal. By his food he is nourished. But in the modern world people do not often eat merely to be nourished. Food should be interesting and enjoyable in addition to being nourishing. Eating is a social activity for most people even the brown bagger and the blue collar worker with a lunch pail who enjoys their sandwiches, apple and coffee seated on the girder of an unfinished building. Business is transacted over lunch; proposals and propositions are often associated with dining out. Important events like birthdays, anniversaries, and holidays are celebrated with good food.

The anticancer properties of clams are being researched by Dominican Sister Arlene Schmeer at the AMC Cancer Research Center and Hospital in Denver. Sister Arlene holds a Doctorate in Cellular Biology and considers her cancer research work with clams to be an extension of apostolic activity.

She has been working with the clam *Mercenaria* commonly known as the Little Neck, Cherrystone or Quahog. She is searching for the key to the little mollusk anti-cancer properties. Sister Arlene goes out on dredges with others to gather the clams in unpolluted waters off the East Coast. They are processed and brought to Denver for additional purification and analysis.

Sister Arlene observed that clams rarely had cancer and that an anti-cancer agent called mercenine in the clams would inhibit the regress breast cancer in test animals. Her long-term goal is to chemically identify and synthesize mercenine. She hopes it could be made and used as we do antibiotics and vitamins now.

Sister Arlene emphasized that it is too early to raise false hopes for cancer victims. It will be at least 4 or 5 years before we can test it on humans and a long tedious process before it can be used on regular patients. The public should not expect a single cancer cure she said because there are so many different types of cancer.

Sister Arlene's original research on clams began when she was looking for an inexpensive source of animal with cancer. In 100,000 clams from unpolluted sites she found none with cancer. However, the Environmental Protection Agency (EPA) recently found 4 cancerous clams in 10,000 from polluted water. Sister Arlene is convinced that the findings point to a link between pollution and cancer.

Migraine is the ultimate in headache misery according to an article in *Health Digest*. If you are among the millions of Americans who suffer from these intense throbbing headaches you have plenty of distinguished company especially among the persons in the arts. Chopin, Chaikovsky, Poe, and Freud all suffered from migraines. The article relates that many of the Adventures of Alice in Wonderland were actually descriptions by Louis Carroll of some of the visual distortions and perceptions that accompany a nightmare.

Migraines are considered hereditary because the tendency to suffer these migraines appear to be passed from one generation to the other. However, even though both your parents have migraine this does not necessarily mean that you will have them too. In addition to inheritance there must also be a triggering factor. Common triggering factors include hormone activity, allergic reactions, diet and anxiety. Many physicians who treat migraine agree that the typical migraine prone person is someone who is very driven and success-oriented. Oddly enough however pressure itself does not seem to be the triggering factor. It's often quite the opposite, a migraine sufferer may go all week without a twinge only to be stricken while relaxing on the weekend.

Women are more likely to have migraines than men with attacks occurring whenever their bodies are undergoing pronounced hormonal change such as during menstruation or ovulation, pregnancy, or menopause.

Diet is another cause of migraine; certain foods such as liver, aged cheese, citrus fruits, red wine, nuts, corn, and chocolate are particularly common culprits. Food additives such as monosodium glutamate (msg) and various seasonings also have been implicated in causing migraines. Also suspect are certain odors such as perfumes, fuels, and certain foods. Changes in the weather, especially a particular type of wind will produce migraine in susceptible persons.

Once a headache has started the most common treatment involves giving drugs to relieve the pain and shorten the attack. Aspirin and other pain killers are sufficient for some persons. Often drugs to constrict blood vessels around the skull must be taken and Ergotamine is the most common. As the vessels constrict the pain is relieved and the headache diminishes. Ergotamine only relieves the symptoms. It does not prevent the attacks. The drug Sansert is said to reduce the number of attacks in many patients although doctors do not know precisely how it works. Side effects of the drug usually suggest that it be reserved for patients who have frequent and severe attacks.

A number of preventive measures can be taken.

These depend upon avoiding what seems to trigger the migraine. If anxiety or tension appears to be a precipitating factor doctors may recommend relaxation techniques. Some patients may temporarily be given tranquilizers. If an allergy appears to be a factor tracing down the cause and eliminating it may well prevent future attacks.

In a recent issue of *Lancet* Doctors Stevenson and Dalessio of the Scripps Clinical Medical Institution at Lajole, California, point out that allergy to food and food as a migraine triggering factor are not the same thing. Even if some patients have fewer migraines by avoiding certain foods this does not prove that they were allergic to the foods. Allergy is defined as immunologically reacting to a substance. These researchers found that some foods contained vasoactive chemicals capable of directly stimulating onset of migraines. For example cheddar cheese contains tyramine which stimulates headaches in many patients on a dose dependent schedule. The doctors point out that food challenge studies are a questionable approach to identifying a migraine factor. They suggest that the approach might be improved by using opaque capsules containing samples of the food to prevent the patient from identifying the test food. Ordinarily food challenge studies do not take into consideration those foods which may include specific stimulating chemicals. Both food allergy and migraine are common; 15 to 20% of the migraine population will have allergies also, but there is no convincing evidence that allergy and migraine are the same or that an allergic reaction to food is responsible for triggering a migraine attack. These men suggest the need for a great deal of further research on the identification and isolation of specific triggering chemicals.

The Food and Nutrition Service has again delayed action on new school meal patterns. According to a report in *CNI Weekly Report* final rules originally due in June probably will not be published in the Federal Register until late next year, for implementation in the 1980-81 school year.

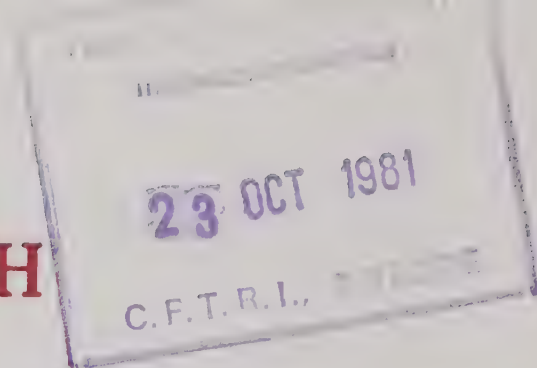
The original proposal in September 1977 was to establish school meal patterns in conformance with 1974 revisions of the Recommended Daily Allowances.

The U.S. Dept of Agriculture's Food and Nutrition Service (FNS) began testing the new requirements in about 300 schools across the country.

"We clearly do not have enough data in" to issue rules by June says FNS acting administrator Robert Greeinstein. He added that school administrators are likely to be pleased with the delay because the changes are so complicated it would be impossible to implement them in time for the nearby school year.

Newsletter

FOOD, NUTRITION AND HEALTH



By

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Monkeys are smarter than we thought. The tiny *Cebus* monkeys that once offered their little caps for pennies while the organ grinder played were much more skilled than anyone realized a Stamford anthropologist has discovered. Laboratory reports on their manipulative ability in captivity are numerous though the wild *Cebus* monkeys are rarely observed to use tools report Suzanne Chevalier-Skolnikoff, lecturer in anthropology at Stamford. She studied the Capuchins in the wild, in zoos, and in laboratory captivity and reported her findings at the American Anthropological Associations Annual Meeting.

The Capuchin's diet includes insects, small mammals, birds, and seeds from seed pods as well as fruit and flowers. Their's was a more extensive diet than comparable Howler or Spider monkeys. She concluded that the use of tools was an evolutionary adaptation for exploiting this diet. This advance cognitive ability enables *Cebus* to obtain foods from their environment that Spider and Howler monkeys in the same Costa Rican forest can not obtain. "Their nonspecialized diet enables them to live under diverse ecological conditions varying from primary rain forests to dry deciduous forest or coastal mangrove swamps" Chevalier-Skolnikoff reported.

This puts Capuchins on a par with chimpanzees who also use tools. "I have given Piagetian intelligence tests to captured *Cebus* and found that they like human infants and great apes can complete the whole sensormotor intelligence series." Among monkeys the high intellectual abilities of *Cebus* are unique.

Editorial comment: In general traditional as well as controversial nutritionists advocate a widely

diversified diet for optimum health and longevity in humans. Actually humans eat a diet which is probably the most diverse of any modern animal. Certainly no other animal gathers his food from the four corners of the earth. The finding of the association of intelligence with diversity of diet raises the interesting question, is one of these factors really a fundamental cause of the other? Does a diversified diet lead to greater intelligence which by positive feedback leads to the development of more clever means of gathering food which in turns leads to a more diversified diet? Or is it as suggested in this report that higher intelligence enables the animal to develop more sophisticated food gathering means and this permits a more diversified diet?

Red dye number three affects dopamine uptake. The food dye known chemically as erythrosin B partially blocks the dopamine in brain cells of rats according to Alan K. Silbergeld and Jeffrey A. Laffermen of the National Institute of Neurological and Communitive Disorders and Stroke. These scientists show that the compound is about 1/100 as effective an inhibitor to dopamine uptake as amphetamine, such a finding is consistent with the theory that Red Dye 3 can produce hyperactivity in some children.

These researchers caution that they do not know whether the dye can pass through the blood-brain barrier in a living animal and hence whether it has any effect in vivo. This study is provocative Silbergeld says but it doesn't prove that dyes in our food can affect the brain.

Recycling presents toxic residue hazards in the

food chain according to three Food and Drug Administration (FDA) officials writing in a Symposium presented in *Food Technology*. The authors point out that the process of cleaning up our rivers, lakes and making air in our cities more breatheable we are adopting recycling procedures which present hazards to the food chain in and of themselves. Our present era is characterized by the intensive use of chemicals in industrial manufacturing and agriculture. We are increasingly aware that our entire world is composed of chemical, that much of our world is contaminated with low levels of environmentally persistent compounds that for the most part did not exist as contaminants 50 years ago.

One example of direct recycling relates to the use of waste paper and associated products for the remanufacturing of paper and paper board. These products became contaminated by polychlorinated biphenyls (PCB) from recycled carbonless carbon paper. Another solid waste recycling problem is animal waste into the feed of food producing animals (each of these has created its share of media time and space).

With the coming of the Federal Water Pollution Act there has been a great increase in municipal and industrial sewage treatment. Obviously there are increasing quantities of sewage sludge which has to be disposed of, one possibility is the application to agricultural land and crops. This brings the risk of contaminating human and animal food with such things as lead from automobile exhaust, zinc and cadmium from industrial plants and tires and waste oil components. Sewage sludge contains a range of heavy metals and other elements known to be toxic. The use of sewage on food crops will also result in increased microbiological contamination since microorganisms are only partly deactivated in sewage treatment processes.

An alternative to the use of sewage sludge, waste water and effluence on land is aquaculture often mentioned in this Newsletter. A number of studies are underway in which nutrients in these wastes are utilized to grow fish or other seafoods sometimes indirectly through growing aquatic plants fed upon by the sea animals. These in turn may be utilized for animal or human foods. Contaminates in the waste products may be taken up and become part of human food chain.

Incineration or burning is another possibility. Unfortunately incinerators vary greatly in their ability to destroy persistent chemicals such as PCB. Some elements such as mercury, cadmium, arsenic, selenium and lead may be vaporized or aerosolized

and settle into surrounding fields. The energy crisis brings on an increasing interest in the burning of waste to supplement the fuel supply.

The most serious problem cited by these authors for agriculture is the widely publicized "acid rain." Combustion of large amounts of sulfur compounds in fuels yields sulfur oxides and ultimately sulfuric acid. Soils may be rendered more acid and less productive; also acid soils have an enhanced uptake of some heavy metals such as cadmium.

Proposals have been made to use the secondary coolant waters of nuclear power plants to assist in the growing of fish and shellfish. FDA takes a skeptical view of this because of the possibility of leakage between the primary and secondary cooling circuit which could result in the release of radioactive residues in the secondary system.

Another area of interest is water purification and reuse especially by food processing plants. These FDA authors see this as increasing the possibility of recycling and concentrating dangerous pesticides and other chlorinated compounds. The risk of bacterial build-up is also mentioned. The authors suggest that all of the potential hazards from recycling must be identified and removed. In the future quality assurance testing would be a necessary cost of doing business to make sure that residues of toxic substances do not accumulate to the point where they pose a threat to public health.

Editorial comment: It seems almost like a situation in which "damned if you do, and damned if you don't." I saw a bumper sticker recently which read "If you feel cold and hungry eat an environmentalist."

Mother nature bug killer is safe and plentiful according to Anthony DeCrosta writing in *Organic Gardening*. The material is certainly not new, in fact it is 150 million years old. The substance is diatomaceous earth which is composed of the fossil remains of the microscopic one-cell diatoms. DeCrosta writes that the supply in the United States is enough to supply the world for the next 200 years.

The action of diatomaceous earth toward insects is strictly mechanical. Each diatom shell is covered with a pattern of tiny holes. Milling breaks down these tiny holes into microscopic razor sharp needles of silica. These attack the wax coating that covers the external skeletons of insects. The small sharp particles scratch the seal, puncture the skeleton and cause the insect to lose moisture and die. Others may find their way into certain insects and interfere with their breathing, digestion, and reproduction.

Thousand of years ago the Egyptians and Chinese recognized that ordinary dust is lethal to bugs and used it to protect stored grain. Almost everyone has noticed that birds and other animals taking dust baths to get rid of ticks and fleas. Because diatomaceous earth (DE) is more absorbent it works better than ordinary dust.

Unlike DDT or malathion, diatomaceous earth is not a poison. It does not attack the insect's nervous system and it does not pollute the environment or accumulate in animal tissue. To be effective as a garden insecticide, however a bug must crawl through it or in some way make contact with it. That indiscriminately applies to beneficial insects as well as undesirable such as slugs and aphids.

The material is readily available from local swimming pool supply stores. Spreading a circle around cabbages it provides a barrier that slugs will not cross. At least one gardener feels that spreading it and tilling it in is effective. It is not total control but it does keep the insect population from exploding according to Rudy Keller of the Old Organic Gardening Experimental Fund.

Diatomaceous earth can be applied dry as a dust or wet by suspending a quarter pound in soapy water using this as a spray.

Dr. Glenn Moore an entomologist at Northrup-King told the author "it's always amazed me that there hasn't been more interest in diatomaceous earth. I've been after the manufacturers to have scientific work done since the 1950's. I think they've got an excellent product. I just wish they would get on and prove the point in a controlled study."

Decatur firm makes gasohol available. Archer Daniels Midland Co. (ADM) of Decatur, Illinois is taking a gamble on gasohol. ADM produces 50,000 gallons of alcohol a day permitting the manufacture of 500,000 gallons of gasohol for distribution in the Midwest.

The alcohol is made from degerminated kernels of corn. ADM extracts the germ which is processed for oil and animal feed. It's the starchy part of the corn kernel that is converted to sugar and then to alcohol. There is only a small residue of about 2% according to ADM Vice President Dick Burket. In early versions of the process ADM did not germinate the corn. In the beginning this resulted in a much larger residue.

Burket feels that a Federal program is needed to make gasohol a competitive alternative to gasoline. Gasohol opponents claim it takes more energy to produce gasohol than the amount of energy it produces.

Bob Schwart an agricultural economist at the University of Illinois quoted the wholesale price of ethanol by fermentation of corn at about \$1.25 per gallon. Assuming a corn price to the farmer of about \$2 per bushel Schwart said wholesale prices of gasoline last December averaged 45 cents a gallon. He estimated the current wholesale blend price of ethanol and gasoline for gasohol to be 53 cents a gallon, about 8 cents a gallon more than the wholesale price of regular gasoline.

Editorial comment: Gasohol is said to burn cleaner and to give better performance than ordinary gasoline. In the absence of objective testing this may contain a bit of wishful thinking. Starch the basic material from which alcohol is fermented is almost entirely encapsulated solar energy. If agriculturally produced starch can be converted to energy without depriving the soil of nutrients or structure we may have a viable program. By another yardstick however the feed and the food grain produced on agricultural lands should be distributed in accordance with a hierarchy of values. Starting certainly with the provision of human nutrition gasohol production should skim its portion off the bottom. I won't comment here as to the relative position in this hierarchy of beer and whiskey.

Sundown farmers account for half of the nation's farmers according to an article by Meg Cox in the *Wall Street Journal*. The sundown farmer is a part-time farmer who combines his farm chores with a 9 to 5 job in a factory or office. He takes his vacation to coincide with planting and harvesting seasons. Because the sundowners make the bulk of their income from their non-farm work they can weather bad times and stay with agriculture for the long pull. Apparently they like the benefits that go with a factory job: the prospective pension and the assurance that even in a drought the family will eat. But they also like to till the soil and be their own boss.

Agricultural analysts point out that this tendency to part-time farming is testimony to the difficulty of making a go of full-time farming. It is also a reflection of the rising expectation of the nation's farmers both for money and for security. Trends show that part-time farmers are as varied in their type of operation as other farmers. They farm as well as their full-time neighbors and on average they have a higher total income writes Meg Cox. Off the farm these people may be judges, bankers, craftsman, factory workers or salesmen.

Corporations are plucking their chicken operations according to a *Wall Street Journal* report by Gene Meyer. Companies like Ralston Purina Co., Pillsbury Co., and KFC Corp. have been getting rid of their chicken-raising subsidiaries in recent years. Big corporations have apparently decided that the vicissitudes of the poultry industry are not consistent with the favored growth they want. The trend seems to be back to the independent chicken raiser. Analysts say that this should mean lower prices to consumers. On the surface however it isn't easy to tell the independents from the giants. Meyers explained vast automated facilities in which everything from breeding to slaughtering is environmentally controlled are standard in the industry. So are computerized purchasing, feed mixing, distribution, and record-keeping. The advantage that independents have over big corporation competitors is flexibility. "You get to call your own shots more quickly and more easily you don't have to fight a lot of corporate red tape," says Cliff Lane of Grannis, Arkansas. Independents are also more innovative. Small producers were among the first to cage chickens so that they would grow faster. Vincent Liuzza of Conticommodity is quoted as saying "independents are financially better off than five or ten years ago. They are optimistic about their industry and they've got the staying power they need to absorb a drop in prices."

Safflower meal may provide human food if the work of scientists at the Western Regional Research Laboratory can be successfully commercialized. In a report from the *Journal of the American Chemical Society* a method was explained to remove deleterious glucosides from safflower meal. The ordinary meal is a high source of protein for animal feeds but has not been used for human consumption because it is bitter and mildly cathartic.

Safflower is grown primarily for its oils. The seed contains about 40% oil after pressing and extractions; the remainder is safflower meal which contains about 25 to 30% protein and 30 to 35% crude fiber. Two phenolic glucosides have been isolated from safflower meal and identified as the products associated with the bitterness and cathartic activity. Animals are apparently not bothered by those substances.

The authors developed several extractions and enzymatic processes for producing safflower meal with low-glucoside activity. Properly processed safflower proteins possess a variety of useful nutritional and functional properties and may be effectively incorporated into select foods say the

authors. They also developed analytical methods to assay the undesirable glucosides in meals.

Food Fair stockholders subsidized the grocery buying public. The *Wall Street Journal* reports that Food Fair Inc. posted a net loss of \$117 million for the 40 weeks ended May 5. Food Fair has been operating under Chapter 11 of the federal bankruptcy law since October 1978.

The company has closed 230 unprofitable supermarkets. Sales from the remaining operations for the 40 week period reached \$793 million from the currently operating 210 stores. A company spokesman has said that the firm has cash enough to meet its current debt and expects to work its way toward a positive net position.

Editorial comment: This report is just a further indication that the high cost of food is certainly not coming from profiteering on the part of the giant supermarket chain stores. Farmers are getting higher prices now but their income has not increased nearly so much as wages and salaries in general. If anybody is benefitting by higher margins in the producing, processing and merchandizing of foods it is the salaried and wage earner who must pay the piper in the form of higher food prices; that is the irony of inflation.

Home cooking is still the cheapest according to a U.S. Department of Agriculture survey mentioned in the *Wall Street Journal*. A hamburger, French fries, and a soft drink at a fast food outlet costs \$1.70, up 48% in the past 3 years. The same food cooked at home costs 83¢, a rise of 51% since 1976.

Editorial comment: As nutritionists and food technologists we tend to think of foods in terms of their nutrients and ingredients rather than in the psychological value of having the family go out now and then for a pleasant meal away from home that Mom does not have to prepare nor create dirty dishes for someone to wash.

Olin convicted of mercury dumping. A jury in Federal District Court in Rochester, New York has found Olin and three former employees guilty of cover-up in connection with excessively high discharges of mercury into the Niagara River. According to a *Chemical and Engineering News* story this is a misdemeanor conviction stemming from the filing of false reports to the government on the mercury discharges between 1975 and 1977. An Olin spokesman pointed out that it was Olin itself that brought the whole matter to the government's attention and that no Olin employee outside the Niagara plant knew of the inaccurate reporting.

Newsletter

FOOD, NUTRITION AND HEALTH

By

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Jere E. Goyan is to be the new FDA Chief. Dr. Goyan is a Ph.D. pharmaceutical chemist and the second Food & Drug Administration commissioner in recent years not to be an M.D. It is interesting to note that in the report in *Food Processing* that none of the final candidates for the FDA top job were experienced in food matters.

The Goyan appointment is the first major one for HEW Secretary Patricia Harris. The appointment does not require Senate confirmation. As FDA Commissioner Dr. Goyan's major duties will be to oversee the regulation of all food except red meat, poultry, and eggs. These are a U.S. Dept. of Agriculture responsibility.

The latest cheese is from peanuts. Scientists at Texas A&M University have produced peanut cheese from peanut flour and milk protein. Other cheese analogues have been made from sodium caseinate a more expensive product obtained from milk. In the Texas's experiments the peanut cheese analogues were judged as having the most desirable flavors of all the analogues tested in casseroles, pizzas, and sandwiches. It gave the most cheese-like appearance.

Steam treated flour makes better sauce or gravy. A Texas milling company is offering a steam treated wheat flour product that improves the quality of food products according to Cal Andres writing in *Food Processing*. The steam treatment inactivates natural enzymes which would otherwise hydrolyze the starches and result in low viscosity sauces unless excess quantities of flour were used.

In the classical preparation of a sauce, flour is precooked with a fat such as butter to form a *roux*. The sauce is prepared by combining this *roux* with the liquid such as meat stock or milk. The precooking inactivates the enzymes. Perhaps Escoffier did not even realize this when he was preparing his famous dishes in the old Paris Ritz. He simply knew that it took much less of a properly prepared *roux* to give his sauce the proper consistency and that such a sauce stood up better.

The new patented treatment gives the food processor uniformity, dependability, and convenience. The heat treatment with high temperature steam also serves to sterilize the product and denature the protein. This contributes to saucy quality by eliminating the long and tedious "scumming" process.

Goldfish aquaculture could produce an American sardine. An extroot farm in the Ozark country is producing plain and fancy goldfish by the hundreds of thousands. So far the fish are bread as aquarium pets but appear to be well adapted to a wide range of indoor and outdoor conditions.

The goldfish is a member of the carp family according to a *Wall Street Journal* article. They originated in China during the Tang dynasty (618-907) or the Sung dynasty (960-1279). Goldfish found their way to Japan around 1500. They were taken to France in the middle of the 18th century to entertain Madame Pompadour and were finally brought to this country in the late 18th century by the late showman P.T. Barnum. The biggest goldfish farm in the U.S. is Ozark Fisheries Inc.

located at Stoutland, Missouri. They ship live fish in plastic bags all over the U.S., Canada, and several foreign countries.

As mentioned the present use of goldfish is as pets to display in aquaria. College kids of decades ago developed an appetite for them. With a little imagination enterprising food technologist could find an opportunity here for a commercial food product. Possibly the attractive gold color would overcome the public negative attitude toward eating carp.

The magic bean is the name given to jojoba (ho-ho-ba) bean by *Entrepreneur Magazine*. The jojoba bean produces a highly-prized unsaturated oil having a multitude of industrial and consumer product uses. An acre of jojoba could replace the oil taken from thirty sperm whales.

The beans are the seeds of a shrub that grows wild in the Southwestern deserts. The oil is actually a liquid wax made of straight chain acids and alcohols that are difficult to produce artificially. The oil is highly-prized for cosmetics, shampoos, sunscreen and after-shave lotion. It is a natural high pressure lubricant and requires little or no refining. Other uses include production of linoleum, varnish, candles, detergents, auto and floor wax, printing ink, carbon ribbon coating, and pill coating.

Intense demand has pushed the price of jojoba oil as high as \$65 per gallon. Most recent sales were for \$6 to \$8 per pound making jojoba oil the highest priced agricultural product in the world with the possible exception of opium or marijuana.

Some Southwestern area farmers have pulled out avocado, grapes, or oranges to provide the land for planting jojoba. Experts predict that they will be about 500,000 pounds of jojoba oil produced annually by 1983. Government economists say prices will gradually fall because of this increased supply to a level of around \$1.50 to \$3.00 per pound by the mid-1990's. There is a potential for incredible profit says *Entrepreneur Magazine*. Projecting average net profit from a jojoba bean venture at \$62,800 with an average cash investment of \$98,500; a 66% return on investment isn't bad but the magazine warns amateurs to beware.

Editorial comment: It is probably too optimistic to rank the jojoba bean with the soybean for long-term potential. Any pioneer takes a high risk. It does look like there is an opportunity here for a new crop to utilize lands considered nearly worthless.

Antibody research promises treatment for myasthenia gravis. Work at the University of Chicago Medical Center and at the Salk Institute in Cali-

fornia may lead to a new and more efficient treatment for myasthenia gravis patients. At least one person in 5,000 has or will be afflicted with this muscular disease. Early symptoms are blurred or double vision, drooping eyelids, or blurred speech. Many of the patients may not even realize they are ill at first and the symptoms may go unnoticed. Myasthenia gravis can however quickly lead to partial paralysis or even death. "In myasthenia gravis the body produces protein antibodies against its own receptor molecules" said Dr. David P. Richman of the Univ. of Chicago, Dept. of Neurology. The point where a nerve contacts a muscle is called a synapse, when a nerve impulse reaches a synapse it triggers the release of a chemical substance called acetylcholine. Acetylcholine almost instantly binds with the muscle receptor molecules which in turn initiate the electrical response causing the muscle to contract.

In a patient with myasthenia gravis, the body produces antibodies which bind to the receptor molecules blocking any further electrical transmission and consequently inhibiting contraction of the muscles. Patients who die of myasthenia gravis actually suffocate because their lungs are no longer allowed to respond to the contraction end of the respiratory control nerve.

The new process involves the use of the poisonous venom of the cobra snake to extract receptor molecules from the electroplax of the electric eel. The receptor molecule is then separated from the venom in the laboratory to yield an extremely pure supply of receptor molecule to aid in research. Dr. Richman then uses a hybridoma, a hybrid cross between an ordinary antibody producing lymphocyte and a myeloma tumor cell. The reason for the hybrid is that lymphocytes do not grow well in tissue cultures but tumor cells do. Whole cultures can be grown from a single cell. A particular lymphocyte produces only a single type antibody. The clone produced by a culture of hybridoma produce only one type of antibody. By working with this Dr. Richman and his colleagues are learning to identify antibodies for at least four parts of the receptor molecule, hopefully exactly the part that is abnormal in myasthenia gravis.

Carol Foreman under double attack. A mid-July issue of *The National Provisioner* declared that Assistant Secretary of Agriculture Carol Foreman is continuing a campaign to destroy the meat and poultry inspection program. "Carol Foreman and her cronies still haven't learned anything — least of all integrity in her 2½ year reign at USDA, and what's more, they don't care. The goal now is to

through, at any cost, the only idea they've come up with — that the USDA in its meat and poultry inspection program should be more like the FDA, which rarely inspects a food plant." Orville Sweet, Executive Vice President of the National Pork Producers Council attacks Foreman for another score that of consumer advocacy. Sweet is quoted in *National Hog Farmer* "we've played this game by Carol Foreman's rules enough, let's go on the offensive, take the consumers into court and make them prove either their allegations with scientific data or shut up." Sweet was referring to crisis in the pork production industry generated by such issues as nitrite, the Delaney Amendment, and "the propaganda war as vicious as World War II, being carried on by half-baked dietary experts." Sweet suggests that the pork industry take the initiative to gather the scientific data to support their case, and then take the consumers to court.

Editorial comment: To brush the findings aside with regard to nitrite, some artificial colors, and other food additives is just as irresponsible a position as scare tactics by professional consumer advocates. Sooner or later, hopefully sooner, a way will be found to put the dangers associated with various food additives and processes into a reasonable perspective.

Converting meat and poultry inspection to a USDA type quality assurance program namely, is something your editor has been advocating for nearly three decades, more self-regulation by the meat packing industry in accord with programs and guidelines set up jointly; responsibility for meat quality to lie with the processor.

Poison ivy reactions may be preventable. A scientist team at the Research Institute of Pharmaceutical Sciences at the University of Mississippi has developed two kinds of compounds that block allergic reaction of guinea pigs to such plants as poison ivy, poison sumac, and poison oak.

According to *Chemical and Engineering News* these plants contain chemical irritants belonging to the chemical family called urushiols. The urushiols are catechol derivatives. Watson, Elsohly and Waller at the University of Mississippi used derivatives of the urushiol compounds to prevent or reduce allergic reactions to them. The methods involved preparing derivatives of the offending compounds or coupling the compounds to the membranes of red blood cells which are then injected into guinea pigs. The modification of the compounds make them visible to the immune system of the animal.

So far the allergy-preventing compounds have been tested only in animals such as the guinea pig. It is hoped that the discovery will be brought to the stage of clinical testing in humans.

Kidney stones can be removed without surgery. An ultrathin fiber optic probe of Russian design for the space age has been applied to the treatment of kidney stones. More than 30 thousand persons annually undergo surgery for removal of kidney stones. The stones themselves are composed of calcium oxalate or uric acid. They are estimated to cause more than 200 thousand persons to be hospitalized each year.

The light carrying probe is fed-up the natural body passage way and enables the doctor to locate the stone, then a miniature stone crusher is brought up, a charge of electricity is fired into the stone shattering it into small pieces that may be passed out of the kidney with the urine.

According to Dr. Ervin M. Bush, Professor of Urology at the Chicago Medical School, University of Health Sciences, the new technique costs less than half of the cost of regular surgery and requires only two to five days of hospital stay. Normal surgery requires a 10 to 14 day hospital stay.

At highest risk of developing kidney stones are people between the ages of 20 and 40 who are affluent and tend to eat well. According to Dr. Frederic Coe, Professor of Medicine at the University of Chicago a modified diet can go a long way to prevent the development of kidney stones. If a person reduces his intake of fish, meat and poultry he can diminish his risk of developing kidney stones.

There is also a useful drug allopurinol normally used to treat gout which reduces the body's uric acid levels and can be effective through preventing kidney stones formation.

A simple enzyme treatment cures slipped discs. Chymopapain is injected into the patient's back and reported to have had a cure rate of about 70% among some 15 thousand procedures. The treatment costs about one-tenth of the cost of a conventional laminectomy to relieve a typical herniated disc.

The procedure was originally developed in 1971 by Dr. Lyman Smith a Belgium, Illinois doctor according to the *Chicago Tribune*. According to the article there was a whole ward of people at Chicago's St. Luke's Hospital comprised of policemen and FBI agents all injured on duty. The Food & Drug Administration however has withdrawn its approval and the drug may not now be used in the United States. "The reasons are obscure, and in my

opinion border on the criminal" says columnist Jack Mabley.

Fast-food chain develops nutritional data. The producers of Arby's sandwiches has developed a new nutritional information booklet listing typical analysis of several of Arby's sandwiches. "Eating right is easy at Arby's is the booklet founded on 8 thousand samples from around the country.

With an increasing number of parents becoming nutritionally concerned for the welfare of their children the fast food concerns are concerning themselves with the development of nutritional information demonstrating that their meals can be nutritionally sound. Your editor has seen literature produced by McDonald's along these same lines.

Editorial Comments: Food companies on the whole are responsible citizens. They do not wish to produce products which are harmful. The most commonly expressed frustration of food scientists is that the public doesn't give a darn about good nutrition. As the public becomes aware and concerned American food producers are willing and very able to respond. There is certainly no need to "go primitive" to get good food.

Nutritionists should approve of fish-frankfurters. In tests conducted by the U.S. Department of Commerce, National Marine Fisheries Service fish-extended frankfurters and hamburgers were ranked as acceptable in texture and flavor as all meat products by high school students who sampled them. Up to 15% fish flush was used in the products. In four tests comparing these with all beef products high school students noted no difference in flavor or texture.

The fish was minced Alaska pollack, a lean white flesh bottom fish. The fish meat contains 17% of protein and less than 1% of fat. Nutritionists who commonly feel that the high school's student's diet contains an excess of fat, refined sugar, and a minimum of protein should be pleased with this development. Presumably these products would be able to meet the requirement.

Plant food is the other side of pollution. Researchers at Argonne National Laboratory near Chicago have found that some plants such as soybeans are benefitted by air borne pollutants such as sulfur dioxide. Plants can also utilize parts of the nitrogen oxides emitted from automobile exhausts. When pollutants of this sort are dissolved in rain the result is "acid rain". The subject is controversial to say the least.

Norman Glass a researcher at the Environmental Protection Agency Laboratory at Corvallis, Oregon

is quoted in the *Wall Street Journal* as saying the benefits of acid rain are pure hogwash. Kevin Green of Citizens for a Better Environment admits that the research "is forcing us to reevaluate the evidence" about sulfur dioxide pollution. The Tennessee Valley Authority, the nation's biggest coal user has come up with some results similar to those found at Argonne. TVA researchers say plants need the sulfur released into the air through the burning of fossil fuel such as coal. Stricter pollution control standards could mean that the sulfur supply in many soils would become a limiting factor of production of all crops. Herb Jones, an air quality researcher at TVA's Muscle Shoals facility says the agency isn't presenting a case against cleaning up pollution from its power plants that is a political question that TVA is inclined to keep out of, but people should be aware that when you control pollution you should apply additional fertilizer, this will increase the cost of food.

Editorial Comment: some 30 years ago yours truly initiated a program of improving grazing conditions on a Florida ranch. We hired a Dr. Roy Bair as an agricultural consultant. One of Dr. Blair's suggestions was that we should apply sulfur to our Florida lands because the location was so remote from any significant sulfur dioxide emitting industry that our pastures were starved for sulfur. He would not allow us to apply triple super phosphate as most fertilizer companies recommended at that time but insisted that we apply only super phosphate which usually contained a significant amount of sulfur.

Microwave cooking may provide better nutrition. A comparison of products cooked in microwave versus conventionally cooked foods demonstrates greater retention of carotene, ascorbic acid, thiamine, and riboflavin in the microwave sample. Another experiment demonstrated a 2.6% decrease in protein in water thawed shrimp versus that thawed in microwave oven. When equal quantities were cooked the yield was 4.5% higher for the microwave shrimp.

Food Service operators can take advantage of the superiority of microwave preparation according to an article in *Food Product Development*. Americans are now consuming one out of three meals from home so they might be rightfully concerned with the effect of prolonged holding of reconstituted foods in a steam table. Microwave reheating provides the possibility of reconstituting products quickly and holding for a relatively short time in smaller lots for serving. The difference could be as high as 18.4% of the RDA's for 4 to 6 year old children.

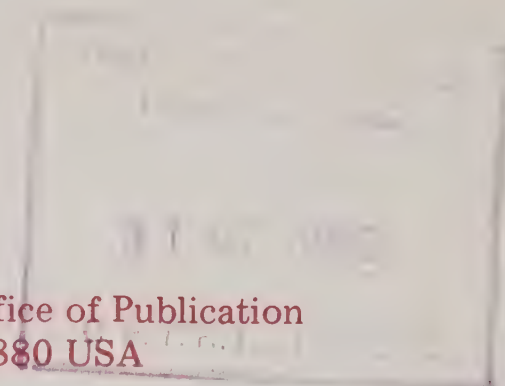
Newsletter

FOOD, NUTRITION AND HEALTH

By

John E. Thompson

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Velsicol has paid \$2.6 million to 70 Michigan farmers. Velsicol and its associated companies has already paid out \$40 million to Michigan farm families to settle claims for damages due to the inclusion of the fire retardant chemical PCB which was mixed with animal feed. There are 69 property suits remaining according to an article appearing in the *Wall Street Journal*.

Editorial comment: It is interesting to note the persons damaged by an unfortunate accident such as this one are able to make good their claims for their damages. As in any other accident case the damaged party can never be made entirely whole. He can only hope to be paid back in money terms. The fact is that neither party intended the accident to occur. Contrary to a lot of do-gooder propaganda very few companies go around seeking to cause accidents. The public relations and money costs of settlements of this sort provide plenty of incentive for any company to try to avoid accidents — without any government help.

Proposed food stamp changes would save \$40 million annually. According to proposals by The United States Department of Agriculture (USDA) Food & Nutrition Service (FNS) a change in the method that eligibility workers now use to calculate applicant income will result in this amount of savings. As a result about 3 million households on the program would lose benefits but no more than \$2 monthly. An additional unknown number now just below the maximum net income level for food stamp eligibility could be dropped entirely.

The proposed change is that state agencies supervising the program calculate family incomes by

rounding down to whole dollars the amount up to 49 cents. Amounts from 50 to 99 cents would have to be rounded up to the next highest dollar. According to present rules eligibility workers are required to round down all cents to the whole dollar figures. The change would have the effect of raising the family income of some applicants and thus function to reduce their benefits or eliminate them entirely from the program.

Gino's seeks to acquire its own shares. The directors of Gino's, Inc. have authorized the purchase of up to 1.2 million common shares of the fast food chain's common stock at \$12.00 each. According to the *Wall Street Journal* the company has currently about 4.7 million shares outstanding. It is traded on the New York Stock Exchange. The company would not disclose the purpose of the purchase. Goldman Sachs and Company will act as dealer manager for the author.

Turkey is turkey is turkey. The American Meat Institute (AMI) plans to seek court aid to block a USDA labeling rule that would legitimize the term "Turkey Ham" which they feel is misleading. Turkey ham is the preparation made from cured turkey thigh meat. It tastes like ham but is made from turkey. USDA officials feel that the consumer is fully informed because they require the makers of such a product to include the words "cured turkey thigh meat" on labels and to meet other ingredient standards.

AMI officials strongly disagree and feel that the new regulation simply legalizes an improper kind of labeling. They don't think that an imitation product

should properly be called a name that should be reserved for ham, the product of a hind leg of a swine. Turkey bologna and turkey salami have been permitted on the market since 1975.

A *Wall Street Journal* staff reporter interviewed Mr. Norman Rich, President of Louis Rich, Inc. the largest cured poultry leader. Mr. Rich said that sales of cured items are increasing 50% or more annually, and repeat sales are fantastic. The dollar amount of sales for the fiscal year ending March 1 were \$164.7 million. Oscar Meyer and Company, a leading meat packer, has indicated that it intends to acquire the Louis Rich Co.

Editorial Comment: For those few members of the public who still think that the frankfurters are sometimes made for stray dogs and pussycats the idea of turkey hotdogs might sound like a good idea. Also those of us who lived in an age when turkey was considered a luxury meat may have difficulty understanding how it could be considered competitive for pork. If however the changing technology of our times makes it possible for poultry products to undersell red meat while providing equal or better nutrition, more power to them.

More rats are getting cancer. A test by the Consumer Product Safety Commission has shown that laboratory rats developed nasal cancer after exposure to formaldehyde vapor. These results appear to have possible health implications to people who work with formaldehyde. The test will not be complete for eight months. It won't be possible to assess what the test results mean for human health until the laboratory experiment is complete and the results are analyzed.

An estimated 6.4 billion pounds of formaldehyde are produced in the U.S. each year with over half by the three largest producers: Celanese, Borden, and duPont. The majority of the product goes in to the manufacture of resins used in adhesives and in plastics. *Some reports may be slanted deliberately to maintain a cancer hysteria.* Editorializing in the *Journal of the American Medical Association* Dr. William R. Barclay has accused the federal government agencies of issuing callous and misleading reports. They unnecessarily scare the public about potentially cancer-causing chemicals. Although ignorance of the existence of the hazard can be dangerous false information can be even more dangerous according to Barclay.

Animals used in cancer tests are given dosages of chemicals that exceed any to which man could be exposed. Further the animals are exposed over their

entire lifetime and the compounds may be administered in ways that are not similar to human exposure. The results are often analyzed by unqualified people. Government agencies often do not submit the results to qualified scientific councils to verify the accuracy of the findings and conclusions. They often release their reports at the end of the week when no one is around to verify or discount the results. By the time an expert can be found the mischief has been done and is difficult to undo according to Barclay.

Biomass as fuel draws increasing attention. At a recent meeting of the American Chemical Society in Washington scientists from the U.S. and a number of foreign countries participated in a Symposium on the Thermal Conversion of Solid Wastes and Biomass. In the U.S. efforts are being made in the area of utilization of wood chips and other forest products residue, agricultural stocks and crops that will grow on otherwise unproductive land, and the use of urban solid wastes. In the U.S. there are 13 biomass conversion projects managed by the Department of Energy. These projects and related systems studies will receive about \$12 million from the Department of Energy in 1979.

Editorial Comment: This subject matter appeared in a Newsletter on Food, Nutrition and Health for more than one reason first, the disposal of urban waste by landfill is a waste of resources and continues to pose a health problem. The use of such material as fuel might recover some of this waste — even if it is only the petroleum energy that goes into transporting the stuff.

For those of us concerned with an on-going supply of healthful and moderate cost food the use of agricultural waste (so-called) to be burned as fuel would be a very dangerous step to take. The food crop producing soils of our country are being dangerously depleted of certain kinds of organic matter by present day intensive agriculture. When the typical gardener thinks about organic matter he is usually thinking of nitrogen bearing matter such as animal's manure. Occasionally a farmer is thinking in terms of green manure or plow down crop. Except in enormous quantities neither of these are the products required to maintain soil tilth. This requires a more stable rooty kind of substance that does not break down rapidly in the soil. Rooty products and some mature crop residues would work in this direction. If we can somehow convince a few people of this need perhaps some of the materials thought presently to be only wastes suitable for fuel could be diverted to rejuvenation of our agricultural lands.

A crash program to make American farms energy independent is a war deterrent. The American farmer who has been steadily substituting machinery for horses, mules, oxen, and manual labor to produce his crop is now using the equivalent of 42 million gallons of oil per day. That is equal to the entire energy budget of a country like Belgium says the *Chief Engineer*. According to former Secretary James R. Schlesinger that means the cost of this oil about half of which is imported hangs like a Kansas tornado over the farmer's head.

Only 16 years ago when oil-fueled tractors were few and far between farmers were growing their own fuel in the form of hay and grain for work animals. Much crop residue formerly fed to work animals is now unused says the article and could be converted into the fuel for tractors and other farm machinery.

The direct way to use refuse is to burn it to power a steam tractor. When these were in common use 60 years ago some were fired with wood, straw, and a few with coal. A modern equivalent might be to powder the refuse and blow it into the combustion chamber of a modern, high pressure, high efficiency steam boiler only a fraction of the size of the old steamers, or possibly use powdered residue to fire a gas turbine.

Another option is to burn the powdered or pelletized form of the refuse in a gas producer. Such producer gas can be used to power present internal combustion engines with only modest modification. Thousands of such producer gas tractors, trucks, buses, and cars were operated during World War II in Europe and Japan.

Biological conversions of farm wastes to either gaseous or liquid fuels are also options. Cattle or hog manure can be digested to produce methane gas as fuel for internal combustion engines.

Another biological option is to convert farm wastes into ethyl alcohol to produce gasohol or to burn straight in suitably modified gas engines. Pyrolytic processes can be used to produce methyl alcohol in a similar fashion.

Here's how this works to be a war deterrent. For the first time in our history says the editor of *The Chief Engineer* a Marine veteran of three wars, our potential enemies are capable of reaching anywhere inside our country with nuclear war heads to destroy such strategic targets as coal mines, oil fields, and oil refineries, also both conventional and nuclear power plants. Such targets are worth the cost of nuclear weapons because they are concentrated.

Even the best equipped and most determined foe could never put over 1/4 of our farms out of action even with his dirtiest A bombs for any prolonged

period of time. If this widely dispersed agricultural base is also our energy base we will have at least two advantages. One, we can continue to supply the nation with food fibers and energy and two, we will have the know-how to build and operate mobile biomass conversion factories to supply fuel for our war machines. This means that even after a nuclear exchange the enemy will not be safe from our vengeance like the Mongol conquerors of old we would be able to wage war anywhere there is "grass for our horses" instead of having to depend on fuel transport lines stretching for thousands of miles behind our armies.

Now our "horses" will be powerful war machines able to live off the land anywhere there is any type of biomass ranging in adversity from grass to desert shrubs to standing farm crops to arctic or tropical forests or even peat.

The specter of a mighty and enraged nation able to rise like a phoenix from the ashes of war in this fashion should be a powerful deterrent to any enemy from launching his war-heads in the first place says Chief Engineer Earnest K. Wulff.

Trace amounts of nitrosamine have been detected in beer. A Food and Drug Administration (FDA) study has confirmed that 28 brands of domestic and imported beer contain trace amounts of N-nitrosodimethylamine (MDMA). The substance is a known carcinogen for laboratory animals, and is at the foundation of the long discussed and much maligned use of nitrite in the cure of meats.

As reported in *Chemical & Engineering News* there is no need for ordinary beer drinkers to be worried. The levels of MDMA range from undetectable to 7.7 parts per billion in the 18 U.S. beers tasted with an average concentration of 2.5 ppb. The MDMA levels in the 12 imported beers tested range from undetectable to 3.6 ppb with an average of 1.8 ppb. Two beers in which MDMA was undetectable are Coors and Guinness stout.

The U.S. Brewers Association researchers say that it is reasonably certain that the nitrosamines in beer are the result of a chemical reaction that takes place when sprouted barley malt is dried directly over a hot flame. The barley malt for a Coors beer is dried by an indirect process implying hot air. The Association said that since June of this year approximately 80% current malting is being done using a technique employing sulfur to prevent the formation of MDMA.

Editorial Comment: Regular readers of *Food, Nutrition, & Health Newsletter* will recall that we reported the findings of nitrosamines in American beers in the September issue of 1978, more than a year ago.

Fertilizer production is shifting to the east according to Richard M. Freeman, Director of the Tennessee Valley Authority in a report appearing in *Chemical & Engineering News*. World fertilizer production will be shifting to those areas of the world having the largest and cheapest reserves of natural gas. Between now and 1985 about 17 million tons of new fertilizer capacity is scheduled. About 40% of this is slated for the mideastern and Asian countries. Another 32% is going to the USSR which ranks second in the world in total gas supplies.

In contrast no new capacity is scheduled for north America and very little in Europe during the same period. Japan ammonia capacity has been cut back because of high energy areas. North America, Europe and Japan have been large suppliers of nitrogen fertilizers.

The cost of synthetic nitrogen fertilizers is of course directly linked to the cost of energy. Since the availability of fertilizer will materially influence the cost and volume of our agricultural production our future Food Nutrition & Health are due to be influenced by the pattern shifts.

Loneliness can be hazardous to your health. Dr. Richard C. Proctor of Wake Forest University, Bowman Grey School of Medicine says that if you have made it to the top but you're lonely the loneliness may be more hazardous to your health than any job related stress. Loneliness of this sort manifests itself in frequent depression and misuse of authority. Quoted by *Industry Week* Dr. Proctor says you're a victim if you have trouble sleeping, feel bad in the morning, better in the afternoon, or suffer indigestion or loss of appetite. Frequently the loneliness is accompanied by nausea, muscle tightness, skin rash, or chronic diarrhea.

One solution suggested by Dr. Proctor is to learn to confide in fellow workers about related problems and develop hobbies, whether they be picture taking or exercising.

Editorial Comment: What fellow who has made it

to the top doesn't have trouble sleeping not because of any insomnia but because he is too busy doing things to go to bed. Needless to say he may feel somewhat better in the afternoon especially late enough in the afternoon so that the office or laboratory again have become quiet. The telephone has stopped ringing; subordinates and other callers have gone home.

The CAT Scanner has earned a Nobel prize. Physicist Allen McLeod Cormick and Godfrey Newbold Hounsfield a researcher engineer were awarded the Nobel prize for medicine for developing a revolutionary x-ray technique called Computerized Axial Tomography — CAT Scanning. They will share the \$190 thousand prize.

The two men conducted independent research leading to the creation of an x-ray system that provides successive sectional pictures of the body. The medical diagnosis breakthrough has been in hospital use for only about 6 years and is particularly useful in examination of the brain and of the nervous system.

The CAT Scanner has also become one of the most controversial pieces of hospital equipment to appear in recent years. They are expensive costing on the order of half a million dollars or more. The criticism comes when smaller community hospitals rush to purchase CAT Scanners in an effort to maintain their status in the community, attract or retain desirable medical staff and project the image of being "with it" as progressive health care delivery agencies. In some cases the expenditure may be unwarranted and the equipment not used to its fullest potential. On the other hand so many new approaches to diagnosis have been generated by the availability of CAT Scans that it is probably much too early to judge how far it can or should go.

What cannot be disputed is that Mr. Cormick and Mr. Hounsfield did start an important medical ball rolling. If Al Nobel is watching he can be proud of this development.

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Newsletter

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By

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Food or fuel that is the question when it comes to a discussion of gasohol. There are still many questions but few answers says an editorial out of the Center for Environmental Quality, Michigan State University. Herman J. Koenig of MSU says 'with present alcohol technology — using grain produced with conventional tillage, nitrogen fertilization, crop drying and running distilleries on petroleum based liquid fuels — it takes more energy to produce the alcohol than the alcohol contains. Alcohol produced this way is no bargain.' If new plants had to be constructed to make alcohol from grain the cost per gallon would be substantially higher than it is today. The available plant for making fuel alcohol would be totally inadequate to make any substantial impression on the motor fuel requirement of the country. At a recent talk before a Chicago section of the Society of Automotive Engineers an officer of the American Motors Co. stated that Amoco had contracted to buy a large quantity of fuel alcohol from ADM at a price in excess of \$1.30 per gallon. If this fuel alcohol was marked up at the usual rate for petroleum fuel and motor taxes added it is well up toward \$2.00 per gallon.

Further farm produced grain is worth more as food and animal feed than as motor fuel when consideration is given to the conversion of grain into motor fuel there is a direct trade-off between food and fuel. There is still quite a way to go before the food/feed price of a bushel of corn will not buy more OPEC oil than it could substitute for converted into fuel alcohol. Any other grain than corn would have a poorer conversion ratio.

Aquaculture plans sunk. Marine Nutritional

Systems, Inc. was to produce oysters and clams in artificial sea water at a huge aquaculture facility at Lamar, Colorado. To finance the Lamar plant Marine Nutritional went public in July 1978 persuading more than 1400 investors to pay a total of about \$1.3 million for the company's shares. According to a report in the *Wall Street Journal* James Kitchel President and co-founder of the company is quoted as saying "No revenues are currently being generated and working capital is insufficient to maintain current overhead." Mr. Kitchel is in hope of finding new financing but the prospects are not rosy. Foreclosure proceedings have begun on the company's oyster farm and hatchery in Brinnon, Washington. Operations at the oyster farm in Dungeness Bay off Puget Sound were closed because of a heavy growth of sea lettuce. If aquaculture is an idea whose time has come it is having a very difficult uphill climb in this country. Very few of the sea-farming enterprises whether they be catfish, trout, or oysters have been great successes so far.

Pillsbury to sell Henrici's and Hoffman House restaurant chains. These restaurants were only acquired by Pillsbury in connection with another acquisition in February of this year. There are seven Henrici's restaurants who take their name from the famous old dining place in downtown Chicago. Any resemblance between it and the type of restaurant is limited to the name. There are 14 Hoffman House restaurants with 5 more currently under construction. Sales of the group exceed 40 million dollars annually according to the *Wall Street Journal*. The purchaser is an investment group headed by Richard Seal, President of the

two chains. Terms of the sale were not disclosed.

Interferon will be produced in Florida. The substance interferon made from human leucocytes and believed to be of significance in the treatment of cancer will be produced as a new drug under the state laws of Florida within 6 months at Life Sciences at St. Petersburg. Production will be 24 billion units per year. This amount is only enough to treat 24 patients at estimated costs of \$60 thousand to \$70 thousand each according to an item in *Chemical and Engineering News*. Interferon is being made by U.S. producers but for research purposes only.

Soviet meat production is not up. In spite of efforts to increase meat production it is running at about the same rate as last year according to official Soviet statistics reported by Associated Press. Beef, pork, mutton, and goat meat production were slightly below last years levels but chicken output was up 9%. Total meat production for the first 9 months of the year totaled 11.8 million metric tons almost exactly equal to a year ago. Meat production in Russia is linked closely to the grain crop. U.S. analysts are watching the Soviet meat animal slaughter for the next few months as an indication of how many animals they will be able to feed through the winter. Russian purchases of U.S. grains are helping to make up the shortages in this years Soviet crop. Analysts say that the home grown grain supply for animal feeding is substantially smaller than last year.

Editorial comment: A recent review of some lecture notes from the Nobel prize winning economist Milton Freedman brings out the nature of the Russian problem. When price is allowed to be the conveyor of information in a free market it is not necessary for a central group to communicate information regarding supply and demand to the many facets of the production and consumption economy. When the markets are centrally contrived it becomes necessary for the central planners to inform all agents of production just what is required and within what bounds of cost and efficiency. In a free market a little higher price or anticipation of a little higher price conveys the information immediately that a given commodity is in greater demand.

Soil is a fragile resource. Scientists in the U.S. Dept. of Agriculture's Soil Conservation Service estimate that it takes about a thousand years to form the soil in an average seven inch plow layer.

They say that even with good tillage and fertilization it takes more than 100 years to form an inch of soil and that it can be washed away by or heavy rainfall on unprotected land.

Editorial comment: Obviously enough food production depends on soil. Not every acre of land that grows great weeds or even a good stand of timber is capable of producing feed and food grains in economical quantities. Far too many city people vacationing in the Great West look upon great areas of what they call waste land and take comfort in the erroneous thought that any and all of this could easily be converted to wheat, corn, and soybeans. Nothing could be further from the truth. If the United States is to remain an important world power and its people are to continue to enjoy a high standard of living the United States will have to take seriously the role of being one of the important bread baskets for the world. Food and feed grains are one of the important renewable resources that we can continue to export year after year in the world market in exchange for energy materials and raw minerals which are so vital to our nation's economy. We had best pay a great deal of attention to holding and building our soil.

There is no single best way to test a carcinogen. Preliminary conclusions of the International Program for the Evaluation of Short-Term Tests for Carcinogenicity include the following, no single test or battery of tests was readily apparent as best-suited for carcinogen screening. Nearly all assays produced both false negative and false positive results; including any assay in a battery of tests will require a trade-off between these two classes of errors. Obtaining reliable data from any test system depends upon the investigator's thorough understanding of the system, awareness of pitfalls, and careful conduct of experiments. Specific conclusions about tests system performance and relative utility must await the outcome of more detailed analysis much of which is underway.

There is strong evidence for the use of a test battery rather than any single or a few tests. Any recommendations about designing a battery of tests will depend upon clearly defining how they will be applied and their relative importance of obtaining false positive and negative results. This international program to evaluate tests for carcinogenicity grew out of a joint effort by scientists from the Medical Research Council and Imperial Chemical Industries in England. These were later joined by National Institute of Environmental Health Researchers and has involved more than 60

scientists from several countries according to Jeffrey L. Fox writing in *Chemical and Engineering News*.

Meat packer agrees to buy two food concerns. Officials for Oscar Mayer and Company of Madison, Wisconsin said that their company has agreed in principle to acquire Chef's Pantry Inc. of Sandusky, Ohio and Powell Valley Foods Inc. of Caryville, Tennessee. The acquisition will be for more than \$25 million according to a brief article in *The Wall Street Journal*. The exact purchase price was not disclosed. Chef's Pantry and Powell Valley Foods make and distribute food products to restaurants, schools, and other food services. They expect sales of about \$65 million this year. Sales were \$52 million in 1978. The two firms currently belong to Sam Stein of Sandusky, Ohio and his family. The agreement must be approved by Oscar Mayer's board and by the Stein group.

The what if syndrome attacks lemon tea. An observation was reported in the November issue of *Chemical and Engineering News* that hot tea with lemon degrades polystyrene cups. Put this together with a 1955 report of tumors in laboratory animals caused by polystyrene implants the question then becomes *if* I drink hot tea from foam plastic cups and *if* I use lemon in my tea and *if* the hot tea extracts some of the polystyrene from the cup and *if* the 1955 report of carcinogenicity from polystyrene is correct don't I have some risk of getting cancer? Obviously enough "what if" sequence can be down to as many steps to a ridiculous level as anyone cares to go. In this case however K.M. Reese investigated the matter and reported it in *Chemical and Engineering News'* Christmas Eve issue.

Foamed polystyrene cups are degraded by substances in lemon rind, notable limonene. The Food and Drug Administration laboratories have already examined this possibility and find that the extract is of low molecular weight and should not be considered hazardous. Lemon juice does not contain sufficient amounts of these oils to affect the cup according to a letter from the Atlantic Richfield Company.

Further John R. Lawrence, Technical Director of the Society of the Plastics Industries, is quoted as commenting on the 1955 report "scientists working in this field now do not consider results as indicative of the materials tested being carcinogenic. When tumors appear only at the site of injection or implantation careful review is necessary if

there is reason to believe that tumors occur as a result of "solid state" carcinogenesis. The results may be inappropriate for extrapolation to human exposure."

Diabetes research provides hope for one million children. It is estimated that one million Americans suffer from juvenile-onset insulin-dependent diabetes. Although human juvenile onset diabetes may have several causes the condition is suspected of involving development of an immune reaction of the patient's own insulin producing beta cells in the pancreas. Dr. Arthur A. Like of the Univ. of Massachusetts Medical School and his co-workers reported animal work in which injection of a serum resulted in the restoration of normal plasma blood sugar in 36% of the treated animals. These findings were reported in *Science*. The anti-serum was prepared in rabbits against rat lymphocytes. This serum was injected intraperitoneally into spontaneously diabetic rats. The treatment was effective in more than one-third of the treated animals. The injection was made in newly diagnosed diabetes. In addition treatment of rats genetically disposed to spontaneously diabetes prevented the disease in 100% of the animals. An untreated control group of the same rats became diabetic at the rate of 33%.

These findings strengthen the hypotheses that cell-mediated auto-immunity plays a role in the pathogenesis of diabetes. Treatment of newly diagnosed human juvenile-onset diabetics with immuno-suppressive drugs is however an experimental and controversial procedure in trial at a few medical centers. There have been no results reported either positive or negative to date.

Poultry wastes reduced feed costs. A father and son team of poultry and livestock farmers in Alabama reports using poultry waste to improve the efficiency and to lower the cost of feeding beef cattle on their farm. An article in *Harvestore Farmer* tells of the L.I. Gilbert operation. They make a poultry litter silage (PLS) from the litter produced from an 84 thousand pullet enterprise which they operate. These chickens produce more than 400 tons of waste each year.

The material is fermented in a limited oxygen atmosphere in a glass-lined steel silo. Litter is hauled in by truck from the poultry houses and is blown into the silo structure. Water is added as waste enters the top. The moisture is necessary to ensure the litter will ferment adequately. Fermentation under the oxygen limited conditions inside

the structure destroys potentially toxic elements in the raw chicken waste and turns the material into a pleasant smelling feed which the cattle find palatable. At the Gilbert enterprises three parts of (PLS) are blended with two parts of high moisture corn along with a protein supplement. The PLS has been analysed to contain 14 to 15% crude protein and 60% TDN. Thus the PLS provided both protein and energy nutrients for the cattle and reduces the cost of feeding the cattle substantially.

Editorial Comment: The feeding of animal wastes to other animals is not new. As a youngster on my grandparents' farm we had pigs "following" cattle to make use of the nutrient material in the cattle manure. Over the past two decades or so a great deal of university work has been done on the feeding of animal manure. Fundamentally it seems sound. It is nature's way to keep nutrients in circulation. Some people do not like to hear about manure being used as a feed for an animal they are going to eat. They don't seem to have this same objection to the use of animal manures as fertilizers on food and feed grain crops or their own backyard vegetables. The risk if there is one is in having pathogenic microorganisms transferred from one animal to another by this pathway. This is the area which should be studied.

Frozen potato in the jacket is a new product introduced by Lamb-Weston of Portland, Oregon. The innovative product retains a natural skin on a sliced potato called the "Natural Cut." The company says that their product can be deep-fried in 3 minutes, grilled for 15 minutes, or baked for 20 minutes in a regular oven. They claim "Natural Cut" is sophisticated enough for steak or seafood and special enough as an appetizer or side dish.

Editorial Comment: Nutritionists should take an interest in this product in that they know well enough a great deal of the desirable nutrition of the potato lies in the skin. Usually removed before cooking, or discarded by the diner eating a skin on baked potato, perhaps the new presentation will encourage more people to eat the skins as well as the pulp of the potato.

Frozen nitrite-free hot dogs make their debut at the Eighth Annual New Products Taste Show of the Eastern Dairy-Deli Association in New York. Mogen David Kosher Meats of Bronx and Wild Winds Organic Farms of Naples, N.Y. introduced frozen hot dogs free of controversial nitrites. An interview with Mogen David spokesman was reported in *Quick Frozen Foods*. He said his firm

had started working on the frozen hot-dog idea several months ago. Publicity about nitrites was widespread enough that people had started to look for them on product labels and the firm was getting a lot of inquiries. Mogen David has never been involved in the production of frozen meats before but without nitrite, freezing is the only alternative said the spokesman. People will have to get use to the fact that nitrite-free dogs don't stay red during cooking like nitrite-treated hotdogs they are familiar with. The new line is of course all beef and meat kosher standards.

It remains to be seen what the acceptance of this sort of product will be. Further it's a question what it will be named since a Federal Court judge has issued a preliminary injunction barring the USDA from allowing sale of nitrite-free meat products under their common traditional names.

200 mile zone makes U.S. a fish-exporting nation. Maybe the 200 mile fishing limit really does not mean unlimited opportunity for the American fish industry according to *Quick Frozen Foods* magazine, but yet good enough to raise the hopes of some of the countries major fish and seafood brokers. Leo Young of the Leo Young Company is quoted as saying "America is now an exporting country for fish rather than an importing country in many respects. For the last two years we've been exporting more squid all over the world, and butterfish, halibut, salmon, king crab meat, snow crab meat — within another year or two I think we will be able to export some of our cod, some of our ground fish, and some of our flat fish."

Quick Frozen Foods also interviewed Gershon Feigen of Central/Seaway/Micosa of Northfield, Illinois. "We used to import 70% of our fish and seafood. This year it's probably 62%, next year it will probably be down to 50%, in the next three to five years 30%." Faigen pointed out that more facilities are available, more boats are being built, more fish are being landed as demonstrated by these statistics." He predicts a great future for the American fish industry;

Faigen's opinion was in contrast to those of an anonymous West Coast broker who claimed that figures on American fish and seafood production are in dollars which does not mean much unless you also see the tonnage record. He was doubtful over the development of the industry. If more American vessels were built they'd cost four times the European price. Foreign fleets can produce the product cheaper.

Newsletter

FOOD, NUTRITION AND HEALTH

By

John E. Thompson

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Afghanistan situation upsets food supply picture. The chain of events following the Russian thrust into Afghanistan has raised many questions that touch on the food supply situation in this and other countries. President Carter's move to restrict grain exports to Russia upsets the agricultural marketing prospects for American farmers and has their Washington representatives taking to their soapboxes. To help placate the expected disruption in the grain markets, a huge gasohol program has been promised. Economists are mixed in their predictions on the final effect.

Your Editor offers these predictions: (1) Wheat exports will not be much different than had been predicted. Pressure from humanitarian groups will not allow the U.S. to cut off shipments that affect the Russian people's health and nutrition. Agricultural interests will support this strongly. (2) Feed grain shipments will be cut and the effect on the Russians will likely be a temporary increase in meat supplies due to slaughter of livestock earlier than planned. U.S. corn will be fed to U.S. livestock. The numbers of cattle on feed cannot be changed much but the ration can be modified to include more grain if corn prices come down. The result will be more prime beef. Killing off the Russian cattle prematurely will have a longer range effect on the Russian demand for feed grain. They won't buy corn to feed animals they do not have. (3) The gasohol project won't do anything but create a new bureaucracy to spend money. It takes time to build alcohol production facilities. We don't have existing facilities to make \$2.5 billion worth of alcohol. The Russian situation will have found another solution before anything practical can be built.

Blacklisting of Asian shrimp imports strains American supplies. Domestic production of shrimp and other shellfish isn't enough to meet demands so imports are necessary. Therein lies a tale of woe according to *Frozen Foods Magazine*. This Fall the Food and Drug Administration (FDA) discovered "an extensive problem of Salmonella, filth, and decomposition" in shrimp imported from India. A more thorough investigation revealed that entrees from Hong Kong, Indonesia, Taiwan, Thailand, and Bangladesh were also problematical. This led to "blacklisting" of entries by FDA. Under this provision FDA details all entries from blacklisted countries without sampling and analysis. Analyses must be done at the owners or importers expense, and removal from blacklisting is done packer by packer as product from that packer is proved to meet acceptable standards. A New York City broker is quoted as saying that it is hurting us very badly; we don't know what to do. Blacklisted shrimp can be landed, then the importer must have a sample taken to be analyzed at a private lab. The cost is about \$450.00 for the test plus \$450.00 more for the loss of the sample. If the shrimp passes, the shipment increases in cost by \$900.00. If it fails, the importer is still out the \$900.00 laboratory cost plus whatever he paid to bring in the load of unsalable shrimp. A not so sympathetic broker took the view that the importers could have banded together years ago to insist on higher quality for Asian shrimp products. All they had to do was insist on what they wanted he said. "It's easy to say that, but it's not that easy," commented the New York shrimp importer." The guy who told you that has probably never been in India or Pakistan. They are too poor, too primitive.

A test-tube baby clinic has been approved. East Virginia Medical College has received the go-ahead from Virginia State Health Commissioner for the nation's first test-tube baby clinic. An announcement to this effect appeared in the *Wall Street Journal* on January 9, 1980. It didn't take long for cries of protest and indignation to come from anti-abortion and religious groups. Medical school officials said the project could get underway in six weeks but the opponents are expected to seek court action to prevent initiation of the program and even though the program is designed to permit couples to have children who are physically unable to have children otherwise the proposition is opposed by the Right-to-Life groups. Their opposition is based on a feeling that the so-called test tube babies are produced under artificial conditions and represent meddling with the natural sequence of things. The anti-abortionists feel that babies conceived in the Petri are very likely to be defective; something that will lead to abortion of the imperfect fetus at a later date.

Expanded pork operations are planned by Iowa Beef Processors, Inc. The company now has a relatively small pork operation. Robert Peterson, President of Iowa Beef Processors says "we aren't in any big hurry but when we come into the business we will come big with a couple of hundred million dollar plants." The "when" is expected to be by the end of 1981. Iowa Beef Processors has a large beef plant under construction near Garden City, Kansas. Mr. Peterson told analysts that the pork expansion would not begin until this plant was up and profitable. These plans were revealed by Mr. Peterson in an appearance before the New York Society of Security Analysts. Iowa Beef Processors is seeking a higher public relations profile according to the *Wall Street Journal* report of the meeting. The new Kansas beef plant is being funded internally and Mr. Peterson told the analysts that his company did not contemplate any equity or equity-related offering in the near future.

Acton Corp to acquire International Food Service Corp. Acton Corp. of Acton, Massachusetts is a diversified snack food and communications concern. International Food Service Corp. (IFC) told the *Wall Street Journal* that it has signed an agreement under which it would be acquired by a subsidiary of Acton. IFC is a distributor of food and other products to hotels, restaurants, and other customers. They had a \$3.8 million loss for the nine months ending September 28, 1979, and a loss from continuing

operations of \$8.3 million for 1978. IFC stockholders will receive Acton stock on a basis of approximately one for eighteen shares of IFC.

1979 champagne rated "exceptional." Production of champagne this year will beat the previous record year level of 1970. However the quality of the 1979 vintage champagne will be "exceptional" say the Champagne Producers Association. A kicker is that the champagne will cost 10 to 15% more. Latest estimates reported in the *Wall Street Journal* point to a production of 44.9 million gallons this year or 5.3 million gallons more than the most optimistic previous forecast. This volume represents about 225 million bottles.

Overall France's 1979 wine harvest won the record 2.21 billion gallons according to French government figures. Although the quality was generally high some part of the wine will be distilled into alcohol to avoid a new flooding of the market. The previous record production was 2.18 billion gallons in 1973. That harvest was followed by widespread riots in wine growing areas by irate wine producers faced with huge amounts of unsold wine.

The wine harvest in Spain, Italy and Greece has also been very good. Overall wine production in the nine nation common market in 1979 was 4.44 billion gallons, very close to the record of 4.52 billion gallons of 1973.

Two million more mouths to feed. The U.S. population gained two million during 1979. This increase exceeded the 1.8 million gain posted in 1978 but was well below the record 3.1 million in the baby boom year of 1956 according to a *Wall Street Journal* staff reporter. The U.S. begins the new decade with an estimated population of 221,895,548 which is up 17.5 million from 1970 according to Census Bureau figures. The annual rate of population increase ranged between 1.6 and 1.8% from 1947 to 1961. The rate slowed between 1962 and 1971, and it has hovered around 0.7% or 0.8% from 1972 through 1978.

Editorial comment: Professional marketers of products are well aware that the reduced rate of population increase during the past two decades means that they must win larger sales volume at the expense of other products if they are to expand significantly at all. No marketing manager would be satisfied with a 1% annual increase in volume. The obvious answer is a greater attention to research and development of new products which can successfully compete with the ones presently on the market. One basic aspect of competitive effective-

ness is the creation of some new appeal or benefit in the food product; let's not overlook another one — economy. With a recession predicted or well underway depending upon your view of economic matters, it seems like new products should reflect economic efficiency as well as other benefits if they are expected to be successful in the 1980s. Your editor predicts an increase in the trend toward more working women. This trend will accelerate more rapidly than any trend to have men and women share the household chores, consequently it will still fall upon the women to be the primary housekeepers. Convenience in preparation and service of her foods will be important to her but it must be cost- and nutrition-effective.

Moonshiners may become legit. Fuel conscious entrepreneurs are eyeing the moonshiner with newfound interest. Businessmen, farmers, and others are seeking out practitioners of the distiller's art in hopes of learning how to produce alcohol for gasohol according to *Farmer's Weekly*. The arrival of interested scouts is being met with surprise by those in Franklin County where the production of high proof "likker" is a way of life for many. Former moonshiner Cecil Love was interviewed. He has become something of a professional consultant on the fine art of distilling spirits: "I'm getting telephone calls from people all over the country wanting to know how to put together a still and about different fermenting steps." Love predicted that old-time moonshiners wouldn't have the heart to get into the gasohol business. They took pride in their products. Love says he knows a lot of boys who would hate to see their efforts poured into gas tanks.

For a serious interest in making alcohol on larger than a laboratory scale *The Mother Earth News* has published a number of articles and gives construction details in Issue Number 58 for a homebuilt alcohol still. You can also buy Mother's alcohol fuel kit directly from the magazine containing all of the goodies it takes to get started.

Humidifiers are not necessarily healthy. Evidence suggests that although humidified air may enhance perceptions of comfort, for ordinary healthy people it makes no difference to health — unless of course it results in humidifier fever. Symptoms of humidifier fever may include shortness of breath, cough, fever, and malaise. If not detected early permanent damage can occur. Writing for the *New York Times News Service* Jane E. Brody reports on some of the negative aspects of using humidifiers in the home. Humidifiers have been the

cause of distressing and confusing respiratory symptoms that can lead to irreversible and potentially fatal lung damage, says Dr. Jordan N. Fink of Milwaukee's Medical College of Wisconsin. Experts in allergic and respiratory diseases point out that evidence for the health benefits of increasing indoor humidity is virtually nonexistent. Dr. Donald Proctor of John Hopkins Medical Center says dry air has no harmful effect on nasal passages of healthy people. He says that it is also open to question as to whether or not increased humidity is of benefit to sick people. The nose is an efficient air conditioning system that warms incoming air to body temperature and saturates it with water vapor even when the air is very dry. Studies of people that work in buildings that are artificially humidified show them to be no healthier than those that work in dry air. Dr. Proctor feels that the reports of upper respiratory irritation commonly attributed to the dryness are more likely due to high levels of pollutants that can build up in indoors when windows are kept shut and homes are tightly sealed to lessen heat loss.

The main benefit of increased humidity is a psychological one says Steven Horvath, physiologist at the University of California at Santa Barbara. "When people breathe dry air they think they are less comfortable than when they are breathing moist air but from a physiological standpoint it really makes no difference."

There are potential risks, cases of allergic lung disease called hypersensitivity pneumonitis have been linked to organisms that thrive in humidifiers. Sometimes there are outbreaks of "humidifier fever" among groups of workers in centrally humidified offices. In extreme cases lung tissue is gradually and irreversibly destroyed. Dr. Harriet Burge of the University of Michigan has made a systematic study of organisms that grow in home humidifiers. She suggests that central units be kept free of scale on which the organisms grow. In hard water areas this may require cleaning the entire unit as often as every week. The cool mist type vaporizer should be emptied and washed daily. She found that adding bleach, copper sulfate, lysol, or other disinfectants to humidifiers had no effect on hazardous organisms.

Health benefits are a major expense. Not only is it a fact that the cost of health care is approaching 10% of the gross national product but health benefits continue to grow as a major expense for an employer. According to a *Wall Street Journal* report General Motors will spend \$1.4 billion on health benefits in the U.S. this year, double that of five

years ago. For comparison this outlay will exceed the annual payment by General Motors to U.S. Steel Corp. its largest steel supplier. In other words when you buy a new General Motors automobile you will be paying more for employee health benefits than for the steel in the car. For another comparison Dana Corp. says that the \$45 million it spent on health benefits in fiscal 1979 was nearly as much as its 1979 dividend payout and equal to 90% of its depreciation expense. Westinghouse projects higher hospital and doctor bills for ¾ of this years 13% increase in health benefit costs for that firm. There is a bit of hope in the report indicating that hospital expenses in August the latest month reported rose less than 13% from a year earlier. That's the smallest monthly increase so far in the past year.

Fewer new drugs in 1979. There were 14 new drugs approved for general distribution by the Food & Drug Administration (FDA) during the past year. Somewhat less than 18 the previous year. Of the ap-

proved drugs one has already been recalled from the market. A blood pressure control product which was found to be capable of producing potentially serious liver damage in a small number of users. Fifty cases of liver damage were reported from among the estimated 300,000 persons who took the prescription. Many health care people will feel that the number of drugs approved is far too small considering the benefits that might be obtained by earlier and easier release of new products. On the other side consumer protective groups will undoubtedly decry the number as too large and reflecting inadequate protection for the consuming public especially in light of the recall that was required for one of these products. It is very difficult to say if the benefits to nearly 300,000 successful users of a product are negated by the 50 who experienced reportable damage. I know that my personal viewpoint would differ considerably depending upon whether I was one of the persons helped or one of the persons harmed.

OTHER NEWSLETTERS IN FOOD SCIENCE

FOOD PACKAGING AND LABELING NEWSLETTER by Food & Nutrition Press, Inc.

Edited by top professionals in the fields of food packaging and labeling, this Newsletter will both aid and inform readers on the latest trends, emerging markets, and legislation in food packaging and labeling. New packaging machine developments will be covered on an international basis. How to cope with environmental pressures will also form an important part of the Newsletter. Supplier trends and shortages, gearing up to price increases, and how to get more for your dollar in food packaging will be given special emphasis. *The Food Packaging and Labeling Newsletter* will keep the regular reader well-informed on all developments in this field.

PRICE TRENDS IN FOOD INGREDIENTS NEWSLETTER

By SAMUEL A. MATZ, Ph.D., Vice President, Research and Development, Ovaltine Products Division, Sandoz, Inc., Villa Park, Illinois

This Newsletter will discuss current and projected trends in prices of a large number of food ingredients and of some packaging materials. Among the ingredients to be covered are sweeteners, milk products, cocoa, fats, vitamins, soy derivatives, eggs, flour, coffee, potatoes, meats, fruits, and vegetables. Other ingredients will be discussed when significant changes occur in their supply or pricing. Special articles discussing long-term trends in groups of food materials will be featured occasionally. Suggestions for replacement of costly ingredients by less expensive materials will be given, when appropriate.

Newsletter

FOOD, NUTRITION AND HEALTH

By

John E. Thompson

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Agriculture uses fuel efficiently. University of Illinois Extension Specialists John Siemens and Bob Volk say that Agriculture requires about 3% of the petroleum used in the United States. In terms of food and productivity the return for this small amount of fuel is tremendous. Fuel consumption for tillage plantings and harvesting is estimated at 7.9 gallons of diesel fuel or 11.15 gallons of gasoline per acre. Ten years ago that amount of fuel cost \$1.25 for diesel, \$2.10 for gasoline or between 1 and 2% of total production costs. The fuel costs to produce an acre of corn now are about \$6.80 for diesel and \$9.50 for gasoline.

Farmers are looking at what can be done or not done to reduce fuel needs and yet maintain high yields of food for the nation and for export. Moldboard plowing for example uses about 1/4 of the fuel used for field operations. In some case moldboard plowing may not be necessary; chisel plowing might be substituted at a considerable reduction in fuel requirement. According to research reports on fields in deKalb and Elwood from the University of Illinois, chisel plowing may offer better water management and wind erosion control but does require more weed and insect control.

Wild foods can overcome wild food prices. With the prices of most commercially available foods skyrocketing many Americans may turn to implementing their home grown diets with free wild foods says Robert Shosteck writing in the *Mother Earth News* a publication devoted to a freer and more independent way of life. Mr. Shosteck has taught courses in foraging but has always suffered

from a lack of adequate information on just how nutritious wild plants may be. He writes "in most cases I could only quote the author of a book on wild foods as my source, who often as not referred to an earlier writer who may well have based his statements on folklore." He thus decided to collect the available solid data on the nutritive value of wild plants. Most wild foods contain less than one gram of fat per 100 grams and are often low in carbohydrate as well. This means that you can fill up on wild grains without necessarily contributing to calories in your diet and increasing one's weight.

Shosteck has fudged a little by including a number of fruits, berries, and field crops in his table of wildings, and indeed these are actually cultivated varieties that can often be found in the wild. Readers are also warned that some of the named plants may not be eatable under all circumstances. Experimenters should fully inform themselves from a good field guide or other competent authority. A plant may be poisonous at one stage in its development and edible in another or as with domestic rhubarb and potatoes one part of the species may be edible while other sections are poisonous.

As mentioned above few wild foods contain enough starch, sugar or fat to depend upon them for human energy needs. The list does however contain eight items that contain more than 12 g of protein per 100 g. For example sunflower seed, butternut, black walnut, beechnut, wild rice, hickory nut and filbert. Soybean is also included whether or not you consider it wild.

A group of 14 wild plants are listed which provide more calcium per 100 grams of food than milk. A

few of these are lambs quarters, Mexican tea, rape mallow, galinsoga, day flower, filbert and sheperd's purse.

Nearly the recommended daily allowance of iron for women and more than a man's requirement can be found in 100 grams of primrose willow or mallow. Particularly rich in vitamin A are dandelion, dock, and lambs quarters. Sunflower seeds, arrowhead, and wild pecan are cited as abundance sources of the B vitamins.

The sugar diseases should be public enemy No. 1. According to William Renaud writing in *Nutrition Health Review* sugar disorders are more prevalent than cancer and more disastrous than heart disease. Hypoglycemia is one of these dangerous sugar disorders. Adolph Hitler, the scourge of our country, showed all of the classic signs of hypoglycemia. His passion for eating candy, cakes, and sugared foods throughout the day and night are a matter of record. Hitler's violent outbursts, sudden changes in moods, extreme flights of fancy, and delusion certainly have been well-charted.

Howard Hughes the late billionaire was considered brilliant, innovative, and superior by all who knew him in the early days. The change in Howard Hughes's life seems to have occurred after a severe plane crash that left him temporarily incapacitated. From that time on Hughes aides attested his dietary habits changed extremely. Chocolate bars became the mainstay of Hughes's diet. Renaud questions if Howard Hughes suffered from hypoglycemia.

Simple hypoglycemia occurs whenever the input of glucose in the blood stream does not keep up with the rate of its removal and its absorption into the tissues. Body cells are crucially dependent upon an adequate and continuous supply of glucose. By a delicate balancing act the endocrine system (pituitary, adrenal, thyroid, parathyroid, gonads, pineal, pancreas) and the liver maintain the correct amount of circulating blood sugar. An overwhelming intake of simple sugar triggers the pancreas to respond by releasing large quantities of insulin in the blood stream. An unbalanced amount of insulin creates further havoc by driving the glucose level below that needed to maintain equilibrium. The result may be hypoglycemic episode that mimics neurologic malfunction. Many cases of nerve palsy, paraplegia, convulsions, thick speech, visual disturbances, insomnia, personality changes and paranoid behavior can be attributed to repeated experiences of hypoglycemia.

Hypoglycemia is the exact opposite of diabetes

yet it is often the forerunner of that disease writes Dr. Emanuel Cheraskin. In diabetes too little insulin circulates in the blood stream. In hypoglycemia there is too much. When the pancreas is called upon to overproduce repeatedly the overburdened gland loses its ability to function with precision and becomes an ineffective regulator.

Dr. Paavo Airola comments that the current fashion among well-meaning health food advocates to drink large amounts of sweet fruit or vegetable juices such as apple or carrot juice can have a disastrous effect on sugar metabolism and can contribute to hypoglycemia or diabetes. Dr. Airola points out that eating carrots or grapes is an entirely different matter than drinking the sugar-laden juice. When we eat carrots or grapes we chew them thoroughly, the carbohydrates and sugars in these foods are gradually and slowly digested. Furthermore a large glass of juice probably represents more fruit or vegetable than would ordinarily be eaten in its natural form.

William Dufty in his book *Sugar Blues* writes that the cure for hypoglycemia is something so simple that no one can make money on it. The remedy is self-governing of the body. The patient with low blood glucose must be prepared to give up refined sugar, candy, coffee, and soft drinks.

Federal agencies publish "Preproposal" for food labeling laws. A master plan to revise food labeling laws has been completed according to an article appearing in *Food & Drug Packaging*. A "Preproposal" was published by the three agencies which regulate food labeling and advertising: Food & Drug Administration (FDA), U.S. Dept. of Agriculture (USDA), and the Federal Trade Commission (FTC). A three part strategy is proposed, and was described by USDA Assistant Secretary Carol Tucker Foreman. The first phase encompasses actions for which the agencies now have legislative authority. The second phase cannot be accomplished under present laws so the agencies are seeking additional authority. The third phase concerns issues on which the agencies have not yet formulated positions but will require further study and comment. Throughout June, July, and August the FDA and USDA will publish a number of proposals to be included in the labeling overhaul. Some of these will concern FDA, others USDA, and some both agencies. They will include (1) amending remaining Standards of Identity to require declaration of all optional ingredients; (2) to require a statement of ingredients listed in descending order of predominance; (3) require that foods containing 10%

or more total fat on a dry weight basis declare the specific source of the fat or oil; (4) order quantitative declaration of total sugars over a certain (undetermined) level; and (5) define the terms "low cholesterol" and "reduced cholesterol" and "free cholesterol" used on labels.

USDA would specifically propose additional rules for (1) mandatory percentage labeling for significant ingredients; (2) require nutritional labeling including information on calories, fat, carbohydrates, protein, cholesterol, sodium, sugars, and other nutrients on foods to which nutrients are added or about which nutritional claims are made; (3) recommend standard serving sizes for various foods; and (4) require open dating on perishable and semi-perishable processed meat, poultry and egg products.

Dietician joins National Pork Producers. A new department has been created within the National Pork Producers Council (NPPC) to focus on nutrition and nutritional issues. The new department will be headed by Ms. Christine Herbert a registered dietitian. Ms. Herbert has had prior experience with the Dairy Councils of Iowa and Arizona and has worked with the medical profession, dietitians, and nutritionists in patient primed educational programs, as well with consumer education projects. Orville Sweet, an NPPC Executive Vice President, said we need to supplement our efforts to communicate with government dietary counterparts and others if we are to protect pork producer's interest in the continuing controversy over dietary issues.

A new hog slaughter record is established. U.S. Dept. of Agriculture figures show that two hog slaughter records were set last fall erasing the hog slaughter record of 8 years ago according to the report in *National Hog Farmer*. A record 2.0 million hogs were killed in federally inspected packing plants in the week ending November 10. Federally inspected slaughter of hogs for the month through November 24 was 7.3 million head, an increase of 21% over the same period in 1978. Commercial hog slaughtering in October reached 9.1 million topping a previous high for any single month of 8.9 million head in 1971. This record posted pork production to 1.5 billion pounds this year, 32% more than all last year.

Fall slaughter was 507,000 head in November, a whopping 47% over the same month a year ago, and 20% over October according to the USDA figures. The average live weight in November was 242 pounds or a pound below last year and 2 pounds

above the November average for the past three years. Lard production climbed 33% to 117 million pounds. This amounts to 5.3 pounds per 100 pounds of hog live weight.

Editorial comment: Slaughter records often topple when hog farmers anticipate lower prices ahead for their porkers or short supplies of feed grain. The pork-eating consumers enjoy a short period of lower pork prices followed by more than compensating higher pork prices later. In this case however there is no indication that the November slaughter represents hogs rushed to market to beat an anticipated decline since the slaughter weight bore up well. Likewise the live production kept pace with the increased pork production indicating that the hogs brought to market were adequately finished.

Pork farmers marketing their animals in October and November could not have anticipated the Russian invasion of Afghanistan and the consequent disruption of the feed grain market in this country. Very likely some wish they still had some of their hogs back on the farm.

Alaskans study shellfish as protein. Powdered shellfish meal made from fishery waste can be fed to animals as a protein source according to research conducted by the University of Alaska. This could move the far north State toward self-sufficiency in producing the necessary foods for hog production says the *National Hog Farmer*. At present soybean meal must be imported.

High protein barley can be grown in Alaska as animal feed. When this barley is combined with the shellfish waste, it could produce a complete feed. The shellfish meal includes various kinds of crab and shrimp. Meal from swimming fish are being used in Alaska as food for pets and other livestock. The University of Alaska research shows that the powdered shellfish can be substituted successfully for about half the soybean meal required in hog rations according to Frederick Husby, the University Researcher. Nutritionally lysine is a limiting amino acid in the barley. Fish meal is a natural source with the highest amount of lysine. This gives Alaska a possible combination to meet the requirements of both protein and lysine while minimizing the imported plant protein requirement. The pork being produced using the fishery waste has passed preliminary taste tests. More extensive tests are currently underway at Oregon State University.

The meal being experimented with for use as hog feed is processed from the viscera shell, and meat wastes. These are dried and pulverized to form a

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near powder. In the case of crab the waste is equal to about 80% of the crab's original weight. This project comes as a happy by-product of an order from the Environmental Protection Agency to the shellfish processors to stop dumping wastes into the State's waters. The fisheries put up the plant which had great potential, but all is not happiness yet as a lot of the shellfish meal is now being sold at a loss in the Seattle, Washington area.

The Meat Board opposes State adoption of dietary goal. A new thorn has been added to the side of the meat industry over food policy according to the national Livestock and Meat Board. This is individual state food and nutrition policy supporting the dietary goal of the defunct Senate Select Committee. A Virginia Nutrition Policy Committee is supporting the dietary goal report that recommends reducing red meat consumption developed by the Senate Committee headed by Sen. George McGovern. The Meat Board Education Director Barbara Hicks attended a preliminary committee meeting of the Virginia group and reported that they are considering using the dietary goals as the basis for much of the state's food policy.

Lung cancer increases in women. Lung cancer in women has tripled in the past ten years. Apparently this is associated in some way with increased smoking by women. This may have come about indirectly from the success of the women's movement. With increased liberation comes increased stress and with stress comes the seeking of relief — a cigarette. A recent CBS radio program indicated that the link between increased lung cancer and increased smoking was similar to the pattern seen in men.

Dire effect of ozone depletion feared. A new report from the National Academy of Sciences points to substantial health and environmental effect that may result from a depletion of the earth's ozone layer due to the release of chlorofluoromethanes (CFM). The decreased ozone layer permits increased ultraviolet radiation through the stratosphere. This may cause large numbers of skin cancers, reduce the productivity of agricultural crops, destroy larval forms of submarine life, and produce a slight warming of the earth's atmosphere.

The Academy's Panel on Stratospheric Chemistry and Transport (PCST) projects that there will most likely be a 16% reduction in the concentration of ozone in the stratosphere if CFM continues to be released at the 1977 rate. Stratospheric ozone is important because it screens out most of the so-called damaging ultraviolet (DUV) radiation

with wave lengths between 290 and 320 nanometers emitted by the sun. The 16% ozone reduction will produce a 44% increase in the amount of DUV reaching the earth's surface. The most important health effect of DUV radiation is in the induction of skin cancer. Non-melanoma skin cancer is the most common form of cancer. It is estimated that there are 300,000 to 600,000 cases per year in the United States. This form of skin cancer is usually developed on parts of the skin normally exposed to direct sunlight and its incidence is correlated with cumulative lifetime exposure to DUV.

Melanoma is a more severe form of skin cancer that is fatal nearly a third of the time. The 1979 incidence in the U.S. is estimated at 13,600 cases. The incidence has been increasing at an annual rate of about 3% presumably as a result of greater involuntary exposure to sunlight. The Committee concludes that the incidence of both types of cancer will increase sharply if there is an increase in DUV radiation.

More than a hundred varieties of agricultural crops have been exposed to increased DUV in controlled environmental growth chambers. Approximately 20% of the varieties are sensitive to daily doses of DUV. Plants grown in the open field appear more resistant. The Committee therefore concluded that the 16% reduction in ozone *might* cause an appreciable reduction in yield for at least a few crops.

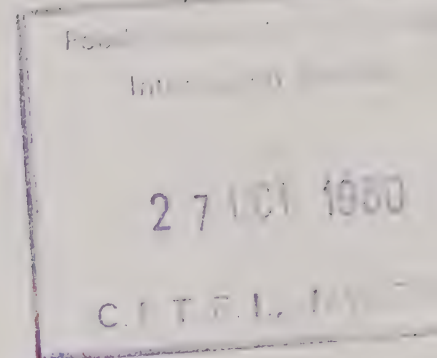
Studies on more than 60 aquatic microorganisms, protozoa, algae, and small invertebrates indicate that most are sensitive to current water surface levels of DUV. The commercially important anchovy normally exists near its UV tolerance limit. Similar studies of crab and fruit larvae show that they too are near their tolerance. According to the article appearing in *Science*, a worse case might result in a kill of over 50% of the anchovies in the top ten liters of the clearest ocean water.

The projected warming of the atmosphere is likely to add only 2 tenths of one degree Celsius or about 10% of the warming that is predicted to result from increased use of fossil fuel.

The United States has already banned the use of CFM in most aerosol spray cans. Thus this country's share of world output of CFM has dropped from one-half to about a one-third. Total reduction of the United States unilaterally can have little effect since the use of CFM elsewhere is increasing. CFM is ideal for commercial refrigeration and air conditioning systems, home refrigerators and freezers, and as a solvent for cleaning electronic components. No fully acceptable alternative has been found.

Newsletter

FOOD, NUTRITION AND HEALTH



By

John E. Thompson

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Embargoed grain may cause change in domestic food prices. Stocks of nearly all food and feed grains are due to increase unless the government does something drastic about replacing the Russian orders for these products. If the corn, wheat, and soybeans are allowed to enter the domestic market freely the manufacturing costs of grain based food products should come down. The government has however promised to take measures to avoid serious disruption of the farm marketing picture. In an election year it is only reasonable that the Administration make some sort of effort to placate the grain producing farmers.

Wait and see if the advice given by Samuel A. Matz in his *Price Trends of Food Ingredients* Newsletter holds. Matz suggested that users hold off major commitments for a time until the situation consolidates and future patterns are more apparent. Matz feels that the grain supply and the demand situation is essentially bearish, with a significant potential for downward movement.

The Russians appear capable of filling their food grain requirements in the world market without difficulty. The availability of feed grains is an economic matter to the Russians not a humanitarian affair with serious social implications. If the Russians can buy low cost feed grains they will produce more meat and poultry animals. If the grain is too expensive these items will simply be more scarce in the Russian economy.

Your Editor feels that the major suffering from the Russian grain embargo will be to the American farmer. He will receive a lower return for his farming effort and his market will be disrupted at least temporarily. Government efforts to offset the Russian

embargo will probably result more in market confusion than anything else. It will probably have the effect of preventing a lower food grain market from reflecting itself in the form of lower priced food for the American public. There will be no winners.

Farm numbers will decline in 1980. The United States Department of Agriculture expects the number of U.S. farms to decline in 1980 but their average size is expected to increase. According to this estimate there will be about 2.31 million farms in 1980 down from 2.33 million in 1979, and 2.37 million in 1978. To offset this the 1980 farm will be 453 acres compared to 450 acres in 1979, and 444 acres in 1978. Farmland under cultivation in the United States in 1980 will be a bit less than in 1979 or 1978. The 1980 farmland total will be 1.04 billion acres about 3 million acres less than 1979 which was in turn about 3 million acres less than 1978.

Editorial comment: Equally important as the number of acres under cultivation is the quality of those acres as farmland. By quality I mean the capacity of an acre of farmland to produce wholesome agricultural product at minimum cost consistent with conservation of long-term productivity. In the absence of nuclear war or an equivalent catastrophe we can expect the human population of the world to continue expanding even at a low rate. Crop producing farmland will become an increasingly critical national resource. I do not see the deserved effort going into the preservation of this national asset. The marketplace forces the American farmer to be short-term efficient; that is, he must produce each year's crop with the least possible cash input. To achieve this American

farmers have become addicted to the use of high potency fertilizers, especially energy-rich ammonia. As the quality of the land decreases increased "injections" of this farmland narcotic is required to maintain yields. The symptoms of "withdrawal" would be very painful if not fatal to many farmers.

President Carter lowers the duty on sugar. The lowest level permitted by law has been prescribed by President Carter for the duty on imported raw sugar — 0.625 cent per pound. The Chairman of the Council on Price Stability Alfred Kahn estimates that this will save consumers more than \$450 million in 1980. In a *Wall Street Journal* article Mr. Kahn is quoted as saying that world sugar prices have reached a level at which domestic producers no longer require the protection of a higher duty. The Administration will monitor the situation and will take action necessary to ensure producers a minimum price of 15.8 cents a pound. World sugar price is currently about 22 cents a pound. This duty reduction will result in a loss of revenue to the government.

Many nutritionists feel that the U.S. consumption of refined sugar is already far too high. If increased prices of this commodity reduce the per capita consumption of "empty calories" the national level of nutrition may improve. Nonetheless the typical American has "a sweet tooth" developed over years of practice and supported by millions in advertising which will be difficult to overcome. Your Editor's guess is that consumers will simply pay the price and support the habit.

Not all fast foods succeed. Mr. Louis Fischer, Chairman of Geno's Inc. told the *Wall Street Journal* that it will be closing 43 restaurants in California, the Midwest and New England. These units had an aggregate net operating loss of about \$2 million in 1979. When including the noncash write off of assets and leases relating to the closed units the after tax loss charged to Geno's earnings will be about \$7 million.

Home health care is reborn. There were no intravenous units, no gloves, no white uniforms, no walls to shut anyone out, there would be no cutting, no forceps, no fetal monitors, so writes Jean Latz Griffin in the *Chicago Tribune*. She was writing about the home birth of the fourth child of Carol and Brad Dunnigan. Present was a fully licensed midwife who had assisted at more than 100 births. She would know when to call for help if Carol needed it. Carol and Brad had taken LaMaze classes to train

for the birth. Carol had been examined by a gynecologist who certified that she was a safe candidate for home delivery. Molly Aileen Dunnigan was born without complications in less than 5 hours.

Night harvest makes better wine. It is the contention of Dr. Richard Petersen of Monterey Vineyard, Gonzales, California that one of the most important improvements in wine grape harvest is the use of picking machines at night when conditions are cooler and wine microorganisms which can destroy varietal flavors do not thrive. The producers of the finest wines have always considered it essential to use hand-picking rather than machine picking. Suppose says Dr. Petersen your crew starts at 7 AM and has the first gondola filled by 11:45 AM. It is hauled to the winery to arrive by noon. Artificial refrigeration must be used immediately to keep the temperature of fermentation under control. Any grapes unfortunate enough to sit around in the sun's heat in a field gondola for several hours before being delivered to the winery cannot produce the best possible wine. Petersen says the fruit in the field is at its coolest when machine-picked at night actually between 1 AM and 7 AM.

The major obstacle to the use of machines in the early years was the inability of some machines to cleanly separate the fruit and the leaves — not to say bird's nest. Clean leaves that find their way to the wine vat may produce off flavors and bitterness. With improvements to mechanical pickers Dr. Petersen says "We now expect fewer leaves in an average load of machine-picked wine grapes than in an average load of hand-picked fruit from the same vineyard."

Heat from a woodburning stove may be a health hazard. Dr. Robert W. Golt, Head of Dept. of Dermatology at the University of Minnesota and President of the American Academy of Dermatology told the annual meeting of the group that the intense heat of wood stoves can cause a permanent discoloration of exposed skin. Dermatologists are seeing more patients with heat-caused brownish skin changes. This skin malady had all but disappeared in the United States with the advent of central heating, but continued to be seen in England where wood and coal burning are still popular means for heating homes. The heat-induced injury to the skin from stoves is far more serious than the skin reddening caused by sunlight or firelight Dr. Golt explained. The infrared rays from the stove caused the pigment in the skin cells to change; the resulting discoloration will take years to fade away, or they

may be permanent. Some medical investigators have found these heat changes to be precancerous. At any rate it would be well for families using wood burning stoves to be aware of their potential danger.

Cyclamates rejected again. Daniel Davidson a Food & Drug Administration (FDA) Administrative Law Judge has for the second time rejected a petition by Abbott Laboratories for permission to resume marketing the sugar substitute cyclamate. Judge Davidson ruled that Abbott had not shown that cyclamates were safe and that they do not cause human or animal cancer. In reaffirming his 1978 ruling Judge Davidson said that the record falls short of proving that the sweeteners caused cancer. Nonetheless Abbott must still prove that they are safe. The FDA ban on cyclamates as food additives in 1969 was based on laboratory tests that suggested that they could cause cancer in animals. Abbott offered several studies supporting the safety of cyclamates. Thomas Craig, Director of Media of Scientific Relations at Abbott laboratories said the company will file dissenting material with Mr. Jere Goyan, FDA Commissioner. Davidson's current ruling is subject to review by Commissioner Goyan.

Health care is shifting gears. Dr. Robert Carlson of Loyola University Medical Center told *Chicago Tribune* writer Eleanor Nelson "medical care in this country is a luxury we can no longer afford." Dr. Walter Wood also of Loyola said "there is a discrepancy between health needs and want, and resources to serve them." We can't count on doctors to keep us healthy in the 80's and we cannot count on local community hospitals to provide the wide range of specialized services that may be required. We will have to travel to regional medical centers according to the Loyola doctors. Soaring costs of medical care and limitations on its ability will make healthy lifestyles a must. We will simply have to take care of ourselves and stay healthy if we are to avoid great costs and considerable inconvenience.

The only reason everyone who needs kidney dialysis is getting it now is because the state and federal governments are picking up the tab according to Dr. Carlson. Shrinking tax revenues may make this impossible to continue. It will also become unfeasible to continue duplicated medical specialization such as open-heart surgery and CAT scanners at each community hospital. According to Dr. Robert Henkin, Head of the Department of Nuclear Medicine at Loyola "Community hospitals will have primarily a screening function and will

treat routine illness. People will go to the larger teaching hospitals for specialized treatment." The three doctors agreed that people can stay out of hospitals in many cases by taking care of themselves. People are responsible for maintaining their own health. It is their job to prevent disease. The doctor's job is to limit it. Dr. Carlson says that doctors will stress preventive medicine in the 1980's but the population probably won't accept it.

Appropriate technology brings settlers to Colombia's hot grass lands. Some eleven years ago the Colombia government named Paolo Lugari to head a world community development program at Las Gaviotas 300 miles from the nearest town on the Orinoco River Basin. So far about 30,000 settlers have been attracted; the goal is 2 million. Everett G. Martin staff reporter of the *Wall Street Journal* writes that the colony is a gadgeteer's paradise. The engineers and scientists at Las Gaviotas have discovered a windmill so sensitive that it spins in winds under four miles per hour to pump nearly 4,000 gallons of water a day. They have a solar hot water heater made out of burned out fluorescent light tubes, and a small hydroelectric generator that can power a farm or a school. They developed a tricycle powered shredder that can shred as much cassava root in a day as it would take a farmer 20 days to do by hand.

The area under development is about the size of Nebraska with thin soil low in nutrients. The engineers hope to give the settlers the water and power they need for their homes and for running such light industry as can be located there. There are some cattle and a type of African sheep being introduced that does not overgraze the grass as much as native variety. One of the engineers Prof. George Zapp from the Univ. of Los Andes in Bogota is quoted as saying "all we are doing at the University was working on scholarly papers to impress other scholars. If we thought about some turbines it was only to write a paper on them for the next big world seminar." After becoming involved in the Las Gaviotas project Prof. Zapp said "Now I don't have any time to write any papers. I must produce real products that work." A sample is the turbine that produces 100 kilowatts of electricity with a simple dam less than 4 feet high.

Tiny balloons act as tourniquets to control bleeding. Doctors at Johns Hopkins University Hospital have created a balloon device that is said to have the potential to aid hundreds of thousands of patients particularly accident victims and cancer

cases. As reported by Gail Bronson in the *Wall Street Journal* the balloon has three main uses: to control bleeding without surgery as in the case of a leaky blood vessel in a large tumor. These can be corked permanently without surgery using this technique. The balloon can be used to control bleeding in accident cases without having to cut into the vessels and tie them off, and surgery can be made much easier by placing balloons in vessels that are expected to bleed profusely during an operation.

The Hopkins balloons are made of silicone and vary in size from a millimeter to 9 millimeters when inflated. Dr. Robert White, Jr. of Hopkins Cardiovascular Diagnostic Laboratory in Baltimore said silicone was chosen because the FDA recognizes the material as non-toxic and non-carcinogenic. For use the balloon is inserted at the tip of a catheter into a vessel "up-stream" from the site to be controlled. The doctor allows the balloon to travel with the blood stream until it reaches the proper location. Once in place a diluted x-ray dye is shot through the catheter to inflate the balloon for a snug fit in the vessel. The catheter can be then disengaged and pulled out of the body. For permanently blocking a vessel it takes ten to twenty days for the blood to clot around the balloon. Dr. White estimates that one-third of the balloon may eventually deflate but it does not matter because of the permanent clot forming. In case of emergency an inflated balloon can be punctured with a needle through the skin. The Food & Drug Administration approved the scientific aspect of the balloon for marketing by Becton, Dickinson and Co. Dr. White's original studies for the balloon were done on pigs, because their blood has the same clotting properties as human blood.

Ward Foods considers disposing of three bakeries. As part of a program to trim its reliance on bakeries, Ward Foods, Inc. a diversified food processor told the *Wall Street Journal* it was thinking of selling or disposing of three loss-plagued bakeries. Two bakeries are in Detroit and the other is in White River Junction, Vermont. The company said the move would result in a pretax charge of \$10 million to \$12 million against 1979 earnings. The company will continue its bakery operations in Chicago and East Orange, New Jersey.

Ely Lilly and Company to acquire Physio-control Corp. Indianapolis-based Eli Lilly and Company told the *Wall Street Journal* it agreed in principle to

acquire the Seattle Physio-control Corp. for about \$143 million of Lilly stock or a total of about 2.6 million shares. Physio-control makes specialized electronic instruments for use in cardiovascular and dialysis. The company also makes products for monitoring human physiology. They employ about 150 people and earned \$3.9 million in the fiscal year ended Sept. 30. A definitive agreement must still be approved by the Boards of both companies and Physio-control's shareholders.

Low-fat diet may not be the way to a healthy heart. In a report last summer the U.S. surgeon general suggested that Americans would be healthier if they ate more cereals, fish, poultry, and fruits and vegetables, and less red meat. A spokesman for Surgeon General Julius Richmond argued that individuals with diets high in saturated fats and cholesterol usually have a greater risk of heart attacks than people having low fat cholesterol diets. Now a private scientific group The American Council on Diet and Health said there isn't any firm evidence that such dietary changes in themselves lower the risk of preventing heart disease. Eating fewer eggs and dairy products removes the most nutritious part of our diet and hurts industry unnecessarily according to Prof. Raymond Reiser of Texas A&M University who helped prepare the report. The Surgeon General and the Council agreed on one point: Americans could avoid heart disease by controlling their weight and exercising more.

Tempeh is terrific and nourishing too. This Indonesian food is usually made from soybean but it can be made from any legume including canned chick peas. It is especially easy for the beginner to start with the canned product writes Carol Keogh in *Organic Gardening*. The finished food is delicious and contains about 18% protein, 6% fat, 2.3% fiber and absolutely no cholesterol. The soybean product offers almost twice the protein as chick pea tempeh but is a little more troublesome to make. The author gives full instructions and even a plan for making an inexpensive homemade incubator in which to culture the tempeh.

The finished tempeh can be sauteed or toasted, shaped into a patty. When put on a burger bun with tomato lettuce and salad dressing it becomes a vegetarian delight. It looks as if it can be substituted in almost any recipe for ground meat. Perhaps a mixture with ground beef would be an inflation-fighting compromise.

Newsletter

FOOD, NUTRITION AND HEALTH

By

John E. Thompson

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New spuds from protoplast research. Potatoes including sweet potatoes, yams, cocoa yams, and cassava present an important class of world food crops in which commercial propagation is asexual rather than by true seeds. This deprives such plants from the genetic diversity provided by sexual reproduction. As a result these species have not been the beneficiary of the "green revolution" breeding technology so successful for such crops as fruit, maize, and rice. According to a report in *Science* by Shepard, Bidney, and Shahin potato improvement has been active for 75 years in Europe and North America without producing a single new potato cultivar that became commercially important. In the United States four cultivars constitute 72% of the total potato acreage. Most important of these the "Burbank" emerged in 1871. The problem seems to be that variation depends upon the occurrence of mutations and useful mutations occur at a very low rate. If cultivars are to be developed which exhibit for example multiple resistances to most major diseases, quick adaptability to new geographic settings, and the embodiment of all cultural traits including yield potential, a new approach must be found.

The authors report on a method employing protoplasts. These are cells artificially deprived of their cell walls. Researchers have shown that entire plants can be regenerated from protoplasts. These researchers have shown that clonal populations regenerated from single leaf protoplasts of the potato cultivar "Russet Burbank" show a high frequency of variation for several horticultural and disease resistant characters. Observation over a period of three tuber generations suggest stable

changes in tuber shape, yield, and maturity date, in photo period requirements for flowering, and in plant morphology. Enhanced resistance to early blight and late blight diseases also occurs regularly within regenerated populations. These findings have possible applications for varietal improvement particularly as they pertain to asexually propagated plants including potatoes.

Over-packaged products are ripping you off. Don't buy excessive packaging is one of the first principles of responsible consumerism writes Joan Coogan in the *Homeward Flossmoor Star*. Packaging is more than protective covering; it is a silent salesman designed to say "buy me" says Ms. Coogan. Sometimes it is deceptive making products appear much larger than actual. Over-the-counter medications and one-dish meal ingredients are among the worse offenders. They are a waste of our money as well as our natural resources needed to produce the packages and then dispose of them.

No frills packaging is part of the reason savings are possible on generic merchandise. Some families are prejudiced against products that look like government surplus goods. Another alternative is a discount store where cans of fruits and vegetables have appropriate pictures on the labels and the soup cans have proper red and white labels even though the script letters don't spell old familiar names. That might be considered a cheap deceptive trick except for the fact that the quality of the soup is as good or better than the best seller. There are significant savings possible by purchasing either generic or discount store brands. The savings justify a little experimentation.

If you buy what's on the inside of the can instead

of what's on the outside you can save money. Even when the contents are second quality you may not be affected. It usually isn't as pretty or as uniform. You won't find anything inedible in generic foods, and you might discover that you actually prefer some discount store brands.

Editorial comment: Ms. Coogan is certainly correct that consumer packages are over-packaged. She is also correct in the observation that such packages are silent salesmen. The products that are apparently successful as generic labeled foods are products which have already been successfully sold to the consuming public by such silent salesmen. It's entirely likely that modern food products would not have made it to the height of consumer acceptance that they now enjoy if it were not for effective advertising and attractive informative packaging.

Cancer warnings come fast and furious. Writing in the *Chicago Tribune* Michael Jacobson of the Center for Science in the Public Interest has effectively summarized some of the situations surrounding such warnings of cancer risks. We are subjected to a barrage of bad news all related to health risks of one sort or another especially cancer. A few dates stand out: the cyclamates battle of 1969-70 certainly brought home to everyone the problem of dangerous chemicals in our lives; Even before then there was the Rachel Carson's *Silent Spring*; (1962; and the 1958 cranberry scare involving the pesticide aminotriazole; and the Heart Association's advice to eat less saturated fat and cholesterol.

There is a growing tendency to feel, "Come on guys, enough is enough; you have already taken away the pleasures of my cigarettes, beer, and coffee, but Mister leave me my hamburger and a ride through the countryside in my new car." When out of the clear blue sky someone warns that hamburgers or new cars pose a cancer risk. There is a tendency for the mind to hit the off "switch".

Here is Jacobson's list of the most critical concerns: (1) cigarette smoking — all the organic food in the world will not protect the smoker from heart disease and cancer. The cigarette is the biggest killer around. (2) High fat and cholesterol. Heart disease is the natural outcome of a diet rich in fatty meat, hard cheese, butter, eggs and saturated vegetable oils. (3) Polluted work places. Occupational health problems and accidents kill about 100,000 people a year. If your employer won't clean up the work place, contact your union and OSHA. (4) Alcohol abuse. Excessive drinking destroys families as well as individual lives, contributes to auto accidents, disease and oral cancer. (5) Salts. High salt diets promote high blood pressure and

stroke. You can eat significantly less salt by switching from processed to natural foods and by using less salt in cooking and at the table. (6). Sedentary life style. Sitting at a desk or in front of a TV set a day promotes obesity which in turn may lead to diabetes, stroke, or heart disease. Exercise also provides a great release for mental and physical strain.

Sugar and food additives are generally less important than the previously mentioned causes of health problems. The following are items that one might keep an eye on if not being very excited right at the moment. (1) Sodium nitrite not only because it promotes cancer but because it is used almost exclusively in fatty foods such as hot dogs, bologna, bacon, etc. (2) Artificial coloring, not only because several are suspected carcinogens but because colorings are used almost exclusively in high sugar or high fat foods, such as soda pop, gelatin deserts, candy and so forth. (3) Saccharin, because several animal studies demonstrate that this artificial sweetener promotes bladder cancer. Diet soda accounts for more than half of saccharin use. (4) Sugar because sugary foods destroy millions of teeth a year and promote obesity. Much weaker evidence has linked sugar to hyperactivity in children and other undesirable mental effects. Eating lots of sugar also pushes more nutritious foods out of the diet. (5) Caffeine which appears to cause birth defects and other reproductive problems when consumed by pregnant women. It also promotes anxiety and insomnia.

An honest diary reveals nutritional needs. A reader of the syndicated column on nutrition by Drs. Jean Mayer and Johanna Dwyer asks "how can I tell if my diet contains an adequate amount of nutrients?" They suggest a food diary.

First pick a period that is typical of your usual food intake. Make sure that it adequately represents your eating habits over a longer period. Write down the type of food, the way it is prepared, and the amount you eat, be it half a cup of soup or a teaspoon of sugar. If it is a mixed dish such as casserole or salad note the major ingredients and estimate how much of each. The doctors add a word of caution. People tend to record what they think they consume rather than what they do consume. They also tend to underestimate portion sizes and the amount of alcohol drunk and forget to record that evening cookie or the three o'clock candy bar. For success you must be honest.

Having made your food record you will then need to compare it with daily US RDA standards. The authors suggest that eight indicator nutrients for which standards are established are probably suffi-

cient to monitor a good diet. These are protein, vitamin A, vitamin C, riboflavin, thiamine, niacin, iron, and calcium.

The nutrient requirement of individual foods in your diary can probably be found in tables contained in Agriculture Handbook number 456 published by the U.S. Dept. of Agriculture, "Nutritive Value of Foods in Common Units." This is available from the U.S. government printing office, Washington, D.C.

Editorial comment: Like many other worthwhile approaches to sound nutrition this one presents a task for the busy person. Your editor has personally undertaken such a diary several times. The first was in connection with an early course in human nutrition where it was a requirement for the class. I have found the technique useful for a reassessment of my nutritional status several times in the intervening years, particularly when I have found a pound or two creeping on and wanted to evaluate where it might be best to curtail caloric intake without damaging nutritive balance."

Tobacco use lowest since 1898. The latest government statistics indicate that adults in the United States consumed less tobacco products per person last year than they have since the turn of the century. Tobacco consumption in 1979 amounted to 7.91 pounds for every American over age 18. That was a 2% drop from two years ago.

Robert Miller, a USDA tobacco economist, is quoted as saying "younger men have been attracted to chewing tobacco. The ads portray a rugged male; whether chewers will persist will be uncertain." Chewing tobacco is the only product bucking the trend toward lower consumption. The new figures show that the use of cigarettes, cigars, smoking tobacco, and snuff have all declined. Miller predicted that a sharp drop-off in cigar and pipe smoking will continue. "Our urban and suburban life style points more and more away from pipes and cigars with smokers preferring a quick smoke as non-smoking areas proliferate."

Another controversial miracle drug: DMSO. Dimethyl sulfoxide commonly called DMSO has been heralded as a new wonder drug of the 1980's, and decried as quackery by others. When applied directly to the skin as an ointment or lotion DMSO is said to reduce pain, swelling, and inflammation caused by a wide range of ailments from simple sprains to crippling rheumatoid arthritis. Fred Belitnikoff, twice the leading pass receiver in the American Football Conference, found relief with DMSO from the pain and swelling of playing in-

juries. Representative Robert Duncan, (D. of Oregon) as used it for years for troublesome bursitis. Janet Fuller of Tampa flies to Mexico several times a year at a cost of \$1,400 a trip for treatment for arthritis writes Arthur Siddon in the *Chicago Tribune*. So far the Food and Drug Administration has refused to approve DMSO for general use, thus making it illegal for the nations 31.6 million arthritis sufferers.

The heart is a target for androgen. It has been previously demonstrated that atrial myocardial cells possess specific estrogen receptors. Texas scientists have now used autoradiographic and biochemical analysis of the hearts of female rhesus monkeys and baboons to conclude that both atrial and ventricular myocardial cells contain androgen receptors.

The fact that there are differences in morbidity and mortality from coronary heart disease in men and women has puzzled scientists since it was observed. White men have more severe coronary artery atherosclerosis and more frequently experience myocardial infarction and sudden death than do white women. On the other hand there is a greater incidence of angina pectoris among women. The differences are not as great in non-white persons. Correlating this with the findings that there are receptors in the heart for sex hormones suggests that these steroids may affect cardiac functions directly, and may explain some of the peculiar differences in heart disease between men and women.

The scientists at the University of Texas Health Science Center reporting in *Science* propose that the distribution of receptors for estrogen and androgen in the primate heart may be important in regulating maturation, function, and response in injury to the heart. The presence of receptors for both hormones in cardiac muscle offers new ways to investigate enigmatic sex differences in the incidence of coronary artery disease, and possibly some of the cardiovascular effects of oral contraceptives.

Caffeine study conclusions stretch too far. Dr. M.F. Lechat and associates of the Catholic University of Louvain, Belgium have written the Editors of *Science* to protest conclusions reached by other scientists based on their publication reporting on a relationship observed between birth defects and coffee consumption. Statements have been made that "caffeine is teratogenic." Dr. Lechat writes "at least as far as reference is made to our study, (this statement) is premature."

Lechat and colleagues have studied the relationship of environmental and dietary factors in a group

of 202 mothers of newborn children with birth defects and a group of 175 mothers of normal children. Coffee consumption during pregnancy was one of the factors that showed a statistically significant difference between the two groups. This difference was particularly marked for heavy coffee consumption defined as eight cups or more per day. Heavy coffee drinkers were represented by 22% of the case group versus 12% in the control group.

Editorial comment: While observations of this sort must be repeated independently before they are incorporated in our health dogma it would seem appropriate in the meanwhile for the prudent mother to be to use a little restraint in her coffee consumption. On the other hand it may well develop drinking 8 cups of coffee per day during pregnancy is simply a manifestation of an anxiety state which could have an effect on fetal development.

Interferon: Industry gets ready. spurred by signs of clinical success a number of groups are pumping additional millions into the manufacture and clinical testing of interferon according to a brief article in *Science*. Interferon is the protein used by virus infected cells that fends off viruses and apparently some types of cancer. "If the drug works the way some people think it does you could be talking about the forerunner of a line of products with an impact like antibiotics" says Nelson Schneider a drug industry analyst for E.F. Hutton investment bankers.

Daniel Azarnoff senior vice president of G.D. Searle and Company Research and Development Division said the company hopes to make fibroblast interferon at a cost of \$25 per million units. The company will soon begin the largest clinical trial yet of fibroblast interferon a type not yet extensively studied. Abbott Laboratories of Chicago separately announced plans to start production of the drug.

Sol B. Gusberg of Mount Sinai School of Medicine and National president of the American Cancer Society announced that the Society will add \$3.4 million to a study of leukocyte interferon in which it has already invested \$2.4 million. 150 patients are now being treated under this study. The problem presently is the extremely high cost of interferon. Leukocyte interferon is made from white blood cells from blood donors and costs about \$50 per million units. Thus a daily dose costs about \$150 and a course of treatment can run to \$30,000.

Excitement and controversy over Nobel sperm bank. The problem is concerned with the practicality and propriety of collecting sperm from Nobel Prize winners to be made available to women desir-

ing to become pregnant by persons of superior accomplishment. The sperm bank was founded by California business tycoon Robert K. Graham developer of plastic lenses for eye glasses. Graham was a friend of the late Herman J. Muller who won the Nobel Prize in 1946 for his work in genetics. Muller advocated sperm banks for famous exceptional people. After Muller died in 1967 Graham began contacting Nobel Laureates asking for sperm donations. Five said yes.

Only one Nobel Prize winner has so far admitted having his sperm on ice with the Herman J. Muller Repository for Germinal Choice at Escondido, California. This is William B. Shockley of Stanford University who shared the Nobel Prize in Physics in 1956 for work on the development of the transistor. Shockley is quoted in a *Science* article "I don't regard myself as a perfect human being or the ideal candidate but I am endorsing Graham's concept of increasing the people at the top of the population."

One view of the project was expressed by Howard Temins who won the 1975 Nobel Prize for his work in genetics. According to Temins genes may directly control personality and therefore progeny of Nobel Laureates may be equivalent to Nobel Laureates.

There are at least five sets of Nobel Laureate parents and offspring on the Nobel roster. In 1975 Aag Bohr won the Nobel Prize in Physics while his father Niels did the same in 1942. In 1970 Ulf von Euler won the prize for his work on the chemistry of nerve impulses. His father Hans von Euler-Chelpin won the prize in 1929 for his research on the chemistry of fermentation enzymes. The English physicist G.P. Thomson won the prize for his work on the diffraction of electrons by crystal while his father J.J. Thomson received the prize in 1906 for work on conduction of electricity through gases. Irene Joliot-Curie shared the prize in Chemistry with her husband Frederic Joliot for synthesizing new radioactive elements while her mother Marie received the prize not only in 1911 in chemistry but also with her husband in 1903 for the discovery of radioactivity. Finally the father and son team of W.H. Bragg and W.L. Bragg won the prize in 1915 for their work on studying crystal structure by means of x-rays.

William J. Broad's article in *Science* concludes on the lighter side with a quotation from Howard Temins "the world can't be in such bad shape if a thing like Nobel Sperm Bank makes front page headlines. Usually you only get something like this in the dog days of August. Maybe things aren't as desperate as I was afraid they were."

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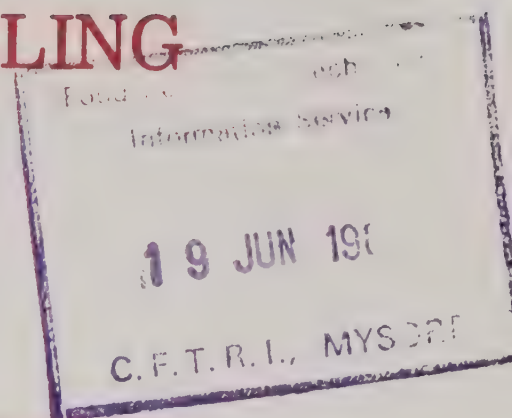
Newsletter

FOOD PACKAGING AND LABELING

By

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NUTRITIONAL LABELING IN THE NEWS

There is news recently about nutritional labeling. This month, two nutritional labeling bills are scheduled for public hearings by the FDA. Introduced by Sen. George McGovern (D.-S. Dakota) both bills would involve voluntary demonstration projects to test how best to convey nutrition and ingredient information to consumers.

The above subject is quite interesting. A uniform, simple system would appear to be the best answer to the problem. Possible answers include a standard code, such as is done in Europe or turning to symbols, thermometer and bar code graphs or even a color-coding system. One of the biggest problems with the current system is the lack of consumer education on the use of new information on labels. The FDA is currently researching consumers to learn their views on nutritional labeling.

NEW ACRYLONITRILE DECISION

The U.S. Court of Appeals for the District of Columbia Circuit recently reached a decision in the acrylonitrile copolymer beverage container case. In its opinion, the court found FDA inadequate in its inquiry as to the food additive status of acrylonitrile copolymers and remanded the matter back to the Commissioner of Food and Drugs to reconsider the decision banning all beverage containers manufactured with acrylonitrile, regardless of their residual monomer level. In addition to remanding the case, the court considered the proper legal interpretation of the food additive definition and concluded, "when there is no reliable evidence of migration, a substance is not a food additive." This landmark decision appears to open the door for FDA to remove any questions about the continued use of PVC packaging.

RETORT POUCH - 1980 IS THE YEAR

Finally, after almost twenty years of research and development,

1980 might be the year for wide acceptance of the retort pouch. Kraft Foods has recently announced its stated intention to join ITT Continental and test market a line of pouch entrees during the first half of 1980. Growth objectives for Kraft in the 1980's include expanding its new product line so its turning to the retort pouch, saying it maintains the quality of frozen food - but has a significantly longer shelf-life. Kraft will be the largest food company to market products in the retort pouch. There is also some indication that two or three companies will come out with a test product later on in 1980. These firms appear to include Hormel, Campbell Soup, and several smaller firms.

There is also a new nylon "belt" on the market that contains retortable pouches of breakfast, lunch and dinner. The "belt" is wrapped around the waist, is 6 in. high, and including contents weighs less than 2 lb. Marketed by American Pouch Foods, it is intended for the hiking market. The retail price is about \$10.00-15.00 per belt.

NEW PACKAGING SHOWS ON THE HORIZON

For the first time there is a packaging show scheduled for Africa. The First African Packaging and Handling Show has been scheduled to be held in Dakar, Senegal during February 1980. It offers the expert and internationally minded food packager, a super method to introduce products into the nations of Central and Southern Africa.

Also planned for 1980 is Pakex-80, the nationwide British show. It is scheduled to be held in Birmingham, England March 17-21, 1980. And on the same trip abroad, between March 18-23, IPACK-IMA, the International Exhibition of Packing and Packaging will be held in Milan, Italy. This is a very large show and promises to give the attendee a "birds-eye" view of developments on the continent.

PVC OUTLOOK GOOD

There appears to be a plentiful supply of PVC resin for future years. In spite of reported polyolefin and petrochemical shortages, Tenneco has recently announced that they will increase capacity for two of its PVC plants by 270 million pounds in the next two years. Borden has announced a new 240 million pound plant to begin production by 1982. Goodrich will at least double its present one billion pound capacity in the next six years. And Georgia-Pacific will bring on an added 180 million pounds later this year, with an additional 220 million pounds by 1982, bringing total annual capacity to 920 million pounds.

In total, the domestic PVC industry's capacity now is 7 billion pounds and it isn't quite up to current demand. The industry experts feel that demand will grow by 10 to 20 percent annually over the next decade.

PACKAGING PRINCIPLES

The dramatic influence of packaging on the lifestyle of the American people has often been underestimated. In view of the

pressures on packaging from various consumer groups, background on the social aspects of packaging is of interest.

Until about eight years ago, the package was required to perform two major functions: (1) to allow the product's delivery to the consumer in a satisfactory manner, and (2) to protect the product and keep it for a specified amount of time (shelf-life). But around the turn of the century, an entirely new dimension was added to the then emerging field of packaging technology. And this was that the package became in itself a sales agent and had to be able to "sell what it protects". The task of projecting a "brand name" became the responsibility of the package.

The idea of "branding" a product was not new. Using the package to convey the brand name to the consumer was new and novel in the 1880's. Goods arriving in bulk in country stores had long been "branded". In its original meaning a brand was a mark applied with a blacking brush or a hot iron to a bale or cask, showing where the contents came from or who shipped them. A brand was also a mark put on a container as a sign that the contents had been examined and passed by a public inspector, and so it came to mean a grade or a certain quality. Buyers came to recognize the brand marks and to rely on them.

By the 1860's a few articles were ready wrapped in amounts convenient for the buyer and the wrapper was printed as an identifying label. In addition, the name or brand, was sometimes impressed on the actual goods.

Between the 1860's and 1880's many factories began to pack their goods in small quantities wrapped in paper and one could buy "a paper" of coffee, or a "paper" of dried yeast. The papers were for the convenience of the purchaser, but they soon began to be used as advertisements and before long thicker paper and even paperboard were being used for wrapping.

But perhaps it was the "Uneeda" package that really pioneered the idea that the package is a valuable marketing tool. Developed around 1895 by the National Biscuit Company (Nabisco), this novel paperboard carton not only kept the crackers fresher than the old "cracker barrel" but also advertised the brand name of the product. This package was the first serious national attempt to use the package for anything other than protection and storage of the product.

Nabisco's "Uneeda" biscuit package did much to bring America and the world, away from anonymous foods sold in bulk from boxes, baskets and barrels. It was the beginning of the colorful rows of food products which line supermarkets today. It also signaled a new wave of marketing to capture brand loyalty.

Changes in technology and style in the early 1900's were reflected in even more changes in packaging. The introduction of Nabisco's "Uneeda" package came at a time when bulk packaging was common in the local general store. All "Mom and Pop" stores were originally located near stage stops and later, near railroad stations. The customer wanted one stop shopping and the general store supplied a wide variety of merchandise. But the arrival of the automobile changed all this and made possible longer trips to

nearby cities for a greater variety in shopping. This "doomed" the general store and with mass production came the arrival of the convenience package and by necessity, the change from protection - protection oriented packages to "packages that sell."

The booming 1920's reflected a gradually improving lifestyle. Cultural activities increased. New industrial development multiplied blue collar and white collar jobs, creating new modes of living. And the automotive industry grew by leaps and bounds. But other than a few widely scattered examples, packaging was still not used to convey the sales message. The reasons for these factors are unclear. Although it has been often stated that many executives felt that all the package had to do was to "protect", it appears that with few supermarkets on the scene in the 1920's and with posters being widely used to convey the sales message, interest in both package design and package sales appeal was minimal.

The dream of eternal prosperity disappeared with the economic crash of 1929. Advertising budgets were drastically cut; new and cheaper ways were needed to convey the sales message to the consumer. Supermarkets were first appearing and finally, after a thirty year lag, management began to once again seriously consider the package as a vehicle towards increased sales of the product. This was the beginning of industrial design as we know it today. Consumers needed to once again obtain interest in products and it was design that was used to captivate the consumer's imagination. A dual role had now been imposed on the package. Now it had to both sell and advertise its contents.

The Depression period of the 1930's ended with the belief that the United States had become a great industrial power. World War II then brought the need for more sophisticated production methods and decline of manual labor. Families with all members working became commonplace.

But it was the period after World War II that has dramatically affected present day packaging trends. The self-service concept spread to more and more areas. Labor costs increased. New factors such as working women, two-income purchasing power, single households and later marriages caused more changes in packaging. Marketing strategies were modified to reflect these rapid changes. And slowly, business discovered that the package could serve the consumer as well as the producer in almost every phase of marketing. The home freezer showed that there was always food in the house and represented security, warmth and safety. Packaging was needed and developed to contain these products. The net result was a new industry made possible by the introduction of packaging materials that could not only protect the product, but also sell it.

Affluency was a characteristic of the 1960's. Extravagant packaging was created to appeal to a better educated consumer group with increased discretionary income. The youth-oriented 1960's gave birth to scores of designs using star-studded illustrations. Convenience became an increasingly important factor in design. And toward the end of the 1960's, a new word - ecology - became an important consideration in the total marketing of a packaged product

With the passage of the Fair Packaging and Labeling Act in late 1966, the age of "consumerism" came into full maturity. More and more people wanted to know more and more information about what was in a product and how much it really weighed.

The beginning of the "consumer age" in the 1960's gave rise to even more consumerism in the 1970's. Nutritional labeling, metrics and child-resistance have all become important packaging considerations. The prospects for a national beverage container law or even a tax on all packaging to be passed in the 1980's is strong.

The 1980's will also bring a shift in demographics as the "baby boom" children reach their most productive adult years and highest disposable income. Geriatrics will also become a viable boom market. And the later decades of this century promise even greater packaging innovations. By the year 2,000, the number of working wives and mothers will reach 90 percent. The increased volume for convenience foods will become an important factor in package marketing. But packaging will still meet the needs of society as it has in the past. Its future appears unlimited--both in terms of growth and service to mankind

The Package in the Marketing Function

In a world where the quality of products is high, almost the only difference between two competitive brands lies in packaging, and only packaging influences the selling operation. Packaging "is a techno-economic function aimed at minimizing the cost of delivery while maximizing sales and profits."

Packaging has also been described as a complex, dynamic, scientific, artistic and controversial segment of business. Basic to this is how packaging fits into the marketing process. The five factors involved in the integration of packaging into marketing will illustrate the dynamic nature of the packaging function.

(1) The package must be able to serve the total retail environment. Packages designed for supermarket sales are different from those intended for industrial distribution. Vending machine designs differ from convenience store packages. Shelf considerations, stacking ability, impulse appeal and protection are all important factors to be considered.

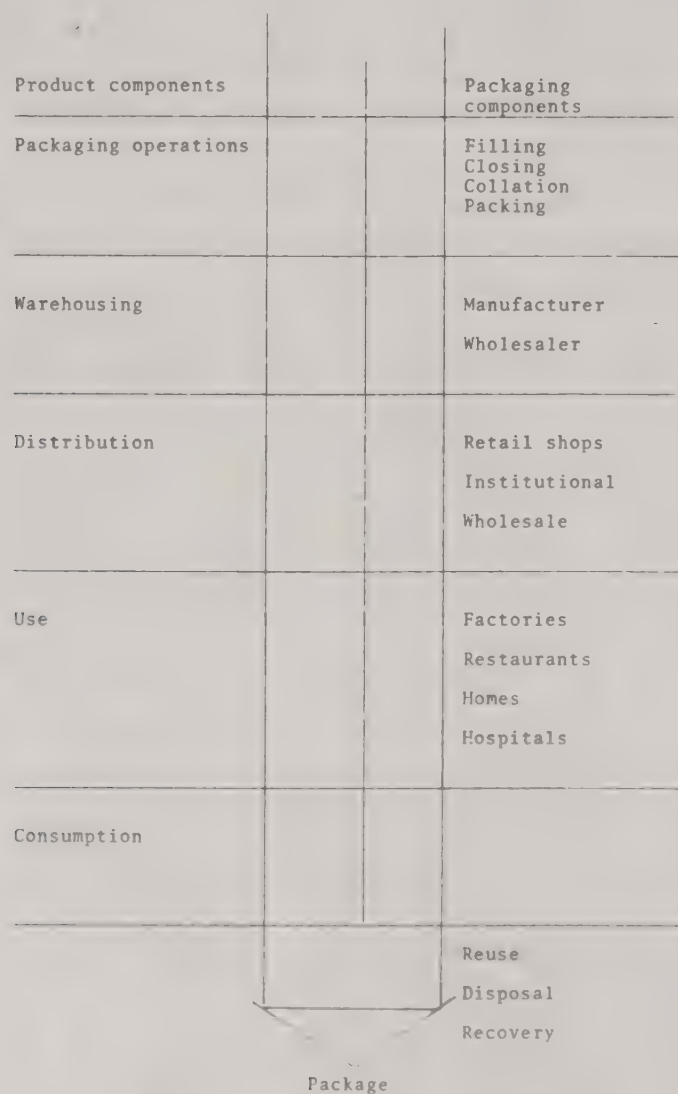
(2) Package color, shape and design must also be researched before the final unit is released for distribution. Color is an important factor in market appeal. Brown colored bread wrappers and earthy colored cartons convey a natural appeal to the consumer. Yellow signifies weakness; red, royalty; and blue, coolness. Shape became a viable factor for the increased sales of Canadian beer in the United States. The bottle used in Canada for LaBatt's beer is short and squat; however, LaBatt market researchers found out that a quality imported beer image can only be projected by a long, slender bottle. The net result was two beer bottle shapes - one short Canadian bottle and one long, slender bottle designed for distribution "down south." But even with proper color and shape, satisfactory surface design and logotype are needed to complete the package's aesthetics. Again, careful study is needed to keep these up-to-date and in strict accord with all the required marketing objectives.

(3) The package must also be able to boost sales of the product by the use of special promotional efforts. Should it be a premium pack, bonus size, coupon pack or generic labeled package? These all convey a different image to the consumer and directly affect the pocketbook of the manufacturer. A new sales promotion project will usually boost sales for a short time only but a longer term impact can be achieved by tying this in with a packaging face lift.

(4) The package must be designed, manufactured and sold in conjunction with a fully coordinated advertising program. It must be able to fit into a company program and be instantly recognizable. The colors must project well on television and not be offensive to any racial or ethnic group. Even though the package is an advertising medium itself, it must work with other media effectively.

(5) The package must also be able to be distributed satisfactorily and arrive safely at its intended sales outlet. All distribution patterns should be checked regularly to ensure that some change has not made the product under- or over-packaged. Testing of both retail and distribution handling are mandatory requirements in package marketing.

Many package developers feel that most of the above discussed factors are inherent to 20th century marketing and were unknown in previous years. Although supermarkets, television and variable distribution techniques are fairly recent developments, the urge to make the consumer "buy" is as old as civilization. The marketing function might not have been recognized, but it always existed. And it always will remain as the overall strategy which moves goods from the site of production into the hands of the consumer. Packaging is a tool of marketing but not its servant. It in itself is a viable factor in the success of a product.



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Newsletter

FOOD PACKAGING AND LABELING

By

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Different markets often require different packages. Just as the converter prices the same material differently for different markets, the resourceful product manufacturer knows that the package that sells for one group might fail for another group of consumers. Potato chips are usually sold in transparent packages on the East Coast; however, they are commonly packaged in opaque bags for sale on the West Coast. Because of consumer preference, the same product is packaged differently. There are many other examples. The failure of Mattel to capture the European market with their successful "Barbie" doll was partially due to their not fully realizing that Europeans were attracted to different clothes on their dolls than were Americans. Although food in tubes sells briskly in European markets, the average American consumer associates the package with toothpaste.

A sound marketing program should begin with a careful analysis of the market demand for the product or service. A company that is production-oriented is likely to treat its entire market as a single undifferentiated unit. Under this concept, one product is produced for one total market and is aimed at reaching as many consumers as possible. When competition becomes severe, a firm may try to differentiate its product from those of its competitors. This product difference might take the form of a package change, a new size or a new flavor. But the total consumer market is *too* diverse to study it as a whole. There are simply too many consumers with too many differences.

The package user must also be able to study demographic (from the Greek, *demos*, people, and *graphein*, to write) trends and use these results in introducing a successful product. One of the reasons given for the projected success of the retort pouch is that the product offers the single-use consumer superior quality and convenience. The concept should grow because single person households grew even faster than two person households and almost doubled the rate of growth of all households during the past 30 years. With declining households (and more available money), the need for a superior, quality-prepared entree increases and the market for the retort pouch is enhanced.

The population of the United States is rapidly increasing. By the year 1980, over 200 million people (up from 100 million in 1915) will be living in the United States. Coupled with a declining birthrate, the trend toward an increased standard of living and greater labor productivity becomes pronounced. The average household size is also projected to decrease by 1990. And this change will result in an increased demand for smaller packages and more variety in product type. These consumers represent a vast purchasing power and only by segmenting them into discrete markets can their full potential be realized. The "power of the package" can often only be used to its fullest advantage when integrated with a scheme of market segmentation.

Regional Distribution

Although the biggest markets are still in the East and Midwest, the greatest percentage in-

creases in the 1980's are expected to be in the "Sunbelt," the Southern and Western regions. This means more brighter, warmer colors in package design and an increased demand for outdoor foods such as barbeque sauce and frankfurters. National food distributors should be aware that a growing segment of their 1980 market will be in these regions and not in the gray and cooler East and Midwest.

Regional differences are also broken down by cities, suburbs and rural communities. Suburbia has long been the traditional area for fast food emphasis. But with changing demographics, fast food outlets in metropolitan areas are expected to increase. Adults, particularly those who work in the city, represent an underexploited market. People can walk to a fast food outlet and not worry about a gasoline shortage. People in the suburbs also tend to eat at home more often than city dwellers. Over 85 percent of all fast food customers live or work within two and a half miles of the outlets they patronize. All this means that whole new markets for fast foods are about to open in the central cities.

Age Groups

In the 1980's, the age mix will reflect not only the low birthrate of the 1930's Depression but also the "baby boom" of the post World War II years. Complicating the market even further is the declining birthrate of the 1970's. It all means that in the 1980's and well into the year 2000, the population will grow at a slower rate with an increasing aging population. Trade sources state that there will be a 42 percent increase in the number of Americans aged 35 to 44 during the next decade.

The huge youth market of the 1960's and 1970's will become the booming young adult market of the 1980's. It is this group that is in the age bracket that usually begin their careers, get married, start families and are fairly big spenders. Equally important is the fact that these people, the rebels of the 1960's, typically have a far different set of personal values and life-styles than did their counterparts of preceding generations.

The youth market (grades 5-13) often influences parental purchases and makes purchases of goods and services for their own person use and satisfaction. Billions of dollars are spent on this group by their parents. Promotional programs are often geared to this segment of the market.

The teenage market is perhaps the one market that exerts the most significant influence on the methods used to market products in this country. It

is a difficult to reach market but one that is a good customer for snacks, convenience foods and soft drinks. A study conducted by the Coca-Cola Company in 1977 found that people in the 16-19 year age group tend to have the highest per capita consumption of soft drinks. Soft drink packaging *must* be aimed at this group. Many firms fail to reach this market because they tend to lump all teenagers together into one group instead of considering the many subgroups based on income, race, political bent, and geographic location.

In recent years, more and more firms have taken a closer look at the more financially secure, large and growing older (age 60 plus) market. This group consumes almost all of their meals at home (84 percent) and rarely skips meals. An expanding market for older people is becoming evident. Dietary supplements, special foods, health care items are special products for this market. The packages used will have to appeal to such older people. In some cases the appeal may have to be made on a decreased ability to cope with package components which require dexterity or skill to operate. Large print is needed with easy to read instructions. Package design will change to reflect the average rise in the age of the population. And products designed and aimed at younger markets will become "salable" to older markets. Del Monte expects that sales of prune juice will go up as people grow older. Gerber, the baby food company, now sells life insurance to older people, using the theme, "Gerber now babies the over-50's". And diet soft drink sales are increasing due, in part at least, to the rising average age.

Sex Role

Market segmentation by sex is important because certain products are purchased more by one sex than another. And with the recent breakdown in sexual patterns, changes in buying habits can be easily traced. Not too many years ago, the wife did practically all the grocery shopping for her family and the husband bought the products and services needed for the automobile. Today men are frequent food shoppers and women buy the gas.

The changing role of the woman has become extensively treated. The number of working women (married or single) is increasing. Women accounted for 32.3 percent of the labor force in 1960, 36.8 percent in 1970, and 39.1 percent in 1975. This is significant to marketers because working women have shopping behavioral patterns and perceptions of their role which are quite different than those of nonworking wives. Over the past several years, the proportion

contributed by a working wife has been about 25 percent of the total family income. In the instances where the wife is working, median family income is substantially higher than in families where just one member is working. This tends strongly to make more discretionary money available to the family for purchasing wants or for purchasing items of a higher quality.

Better packaging always emphasizes higher quality products. Also, better packaging will attract attention to discretionary items. Since many discretionary items are impulse-bought, attractive and appealing packaging are of great value in stimulating sales. People do pay more for psychologically pleasing products and aesthetically appealing packages.

Family Life Cycle

Markets are also commonly segmented by the various stages that a family undergoes in the life-cycle. Single households tend to be more affluent, more mobile and more oriented to immediate pleasures than family households. They are more interested in leisure-time activities and fashions. Another market, just recently becoming visible is the group living with nonrelatives without benefit of energy or city hall. This group increased over 800 percent between 1965-1974. There are some other interesting demographic trends in the life-cycle category. About 55 percent of all households have more than two people, compared with 40 percent in 1950, and 46 percent in 1960. Divorces rose 55 percent between 1970-1977 and single people are now 30 percent of the population, compared to only 15 percent in 1960. One parent homes increased 35 percent between 1970-1977, and childless families went up 17 percent in the same period.

Ethnic Groups

For some products, it is often quite useful to analyze population on the basis of race, religion or national origin. People of Mexican descent in the Southwest have some product preferences that are quite different than those consumers of Oriental descent living on the West Coast. Religious mores in Utah affect the market for coffee. There is a large market for Polish sausage in some Midwestern states.

One ethnic group that has received a substantial amount of attention is the growing black market. The market contains an estimated 25 million consumers with a combined buying power of close to \$100 billion. Black consumers tend to be loyal and

when a line is well-merchandised, word gets around and volume increases. There are defined characteristics in the black market: (1) Given equal income spending patterns are different than for whites. (2) Blacks are considerably younger with a median age of 21 against the white median of 29. (3) Blacks are growing in importance and will account for one-fifth of the net population gain between 1980-1990. (4) Black mothers are more concerned about nutrition. They have less faith in the lunches their children receive at school. They put more emphasis on breakfast. (5) Black tastes are different and reflect Southern origins. Black consumption of soft drinks in Chicago follows the same pattern as in the South. Colas, grape and orange drinks are favored. Root beer doesn't even exist. (6) Two-thirds of blacks live within the inner city. Smaller packages and products appeal to them. (7) Blacks use products differently. Black mothers put more of themselves into food preparation. Spare rib sauce is used for more kinds of meat than spare ribs. Hot cereals are used more. A meal without gravy or sauces doesn't look appetizing.

Another ethnic group of increasing importance is the 20 million Hispanics. Spending over \$30 billion, the U.S. Government estimates that by 1985, the Hispanic population in America will exceed that of any other minority. Just as with the black market, there are certain demographics characteristic of the Hispanic consumer:

(1) There are about 13 million Hispanic Americans in the U.S.. Combined with the estimated 7 million illegal Hispanic aliens, the total market consists of 20 million consumers. (2) The Hispanic market has experienced a growth rate of 124 percent in 15 years. (3) Hispanics are concentrated in California, Texas, New York, New Mexico, Arizona, Florida, Colorado and Illinois. (4) The median age for the Hispanic consumer is young, 21 to 22 years old. (5) The median annual income for Hispanic households in 1979 was about \$14,000. (6) The Hispanic consumer tends to buy the "best" they can afford and is conservative and family-oriented.

There are many other factors that should be considered in a complete demographic study of consumer habits. People alone do not make a market; they must have money to spend. A detailed study of income, its distribution and how it is spent is also essential in any quantitative market analysis which an individual firm can make. The distribution of income affects the market for many products. The "income pyramid" is turning upside down over a period of 20 to 30 years. Family expenditure patterns vary

depending upon family income and stage of the family life cycle. Families with older children spend relatively large amounts on foods. Younger families must devote large shares to buying and furnishing a house.

DEPOSIT VERSUS RECYCLE

During the last five years, there has been noticeable interest in the problem of package litter. Advocates of deposit legislation are actively battling the proponents of recycling. What's the answer? Its hard to say — but here are some facts supporting both sides of the argument.

In Oregon, which passed the first law to reduce solid waste and litter by forcing consumers to return bottles and cans to stores to collect deposits, Portland consumers pay 24 cents more for a six-pack of a popular beer (not counting the deposit) than do residents of Vancouver, Wash. Portland is just across the river from Vancouver.

In Michigan which is the largest state to pass a bottle deposit law so far, residents near the border are reported driving to nearby states without bottle laws to save \$6.00 on a case of beer. Michigan officials say that 250 head-of-family jobs have been lost due to the closing down of small bottle and can plants.

All this driving costs money in both gas and time. The Pacific Coca-Cola Bottling Co. reports in an 1978 study that it needed about 94 gallons of gas to deliver 1,000 cases of soft drinks in Oregon, but only about half as much to deliver the same amount in neighboring Washington. Also, refillable containers consume one-third more oil than can systems, which rely mainly on coal as an energy source. Conversion to refillable bottle systems does save coal, but also increases oil consumption.

It now appears that voters are starting to reject "bottle bills" as a solution to environmental problems. In the Nov. 6 elections, Ohio and Washington both rejected "bottle bills". These rejections raised to 33 the total of states which have

turned back bottle legislation in one form or other since January '79 — the latest being the California Senate in January '80 by a vote of 24 to 12.

The solution now appears to be litter recycling legislation because it effectively attacks all litter, including the 80% which comes from sources other than cans and bottles. In eight states, with 20% of the U.S. population, this has been the route taken toward total solid waste disposal in preference to bottle bills.

As an example, in 1971, the state of Washington passed a litter recycling law. When six years later the Institute for Applied Research compared Washington and neighboring Oregon with their competing solutions to the litter problem, it found that Washington's litter program was significantly more effective than Oregon's.

It is important to realize that recycling laws affect all litter. They fund plants for recycling and create new jobs without trade-offs.

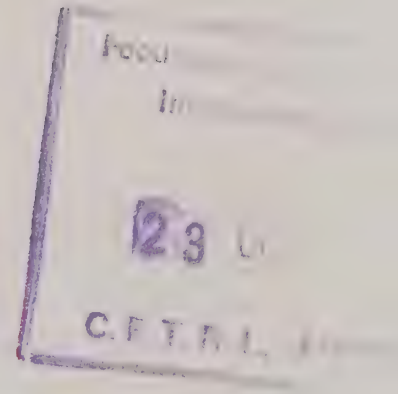
There also appears to be two main factors mitigating the forces against mandatory deposit legislation. The loss of jobs is one basic reason. In vetoing the Massachusetts deposit bill last July Gov. Edward King estimated that 900 existing jobs would be wiped out in Massachusetts if the bill became law.

Inflation and the energy crisis are two other evils said to be worsened by forced deposit bottle bills. The increased costs incurred by beverage retailers and wholesalers for handling, sorting, transporting and washing empties are passed on — and the profits stop at the consumer. In addition, the procedures essential in refilling sterilized bottles take four to seven times the hot water required to process cans for filling. And water shortages are becoming commonplace in the U.S., especially in the West.

To sum up — beverage containers and tops make up only about 5% of urban street litter and 16% of rural highway litter. If every single container were traded in for its 5-10 cent deposit, 95% of urban litter would remain exactly where it is.

Newsletter

FOOD PACKAGING AND LABELING



By

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MANAGING THE PACKAGING FUNCTION

"With \$25 billion annually being spent on packaging (about 8 percent of the total value of goods produced), there is good cause for a company's secretary-treasurer, comptroller, or vice-president of finance to take a hard look at the packaging function."

Walter P. Margulies (1970) in *Packaging Power*

It has only been since the mid-1950's that American business has recognized packaging as an integral part of commerce. It was in these years, that the combination of the graduation of the first class of packaging engineers (Michigan State, 1957) and rapidly increasing governmental legislation led many in industry to realize that by properly managing packaging activities, company profits could actually increase. All of a sudden, firms organized packaging departments, hired coordinators and outside consultants in an effort to quantify their packaging decisions. Many of these persons were unaware of the new packaging technology but were willing to adapt and learn "on-the-job." And fairly soon, a new, bright and energetic cadre of packaging professionals appeared on the scene. Although knowledgeable in packaging, they were forced to report to many in industry that had only a fleeting knowledge of the field. Although this problem still exists; the last decade has seen a more organized packaging function arise that is not subordinate to another department but capable

of standing on its own two feet.

There are many ways to manage the packaging function. A product manufacturer looks at his packages somewhat differently than the converter who supplies the material from which the package is made. Even in the product manufacturer's organization, a certain degree of variation exists.

Product Manufacturer

The product manufacturer or user of packaging materials is concerned that his product will be delivered to the ultimate consumer safely and at minimum cost. Consumers often judge a company according to the care the company takes of its products. If the care is adequate, the consumer's confidence is secured and the image of the company is consolidated. Smudged package printing, easily-breakable bags and crushable cartons do not lead a consumer to think very highly of the product. And while the manufacturer's basic concern is his product, by necessity, the package containing the product must be as carefully developed as the product itself. How to manage the many people involved in product packaging — from chemists and engineers to artists and marketing personnel — is not simple nor is it done successfully in all firms.

Most medium-to-large producer firms have formal packaging departments. These will vary depending on the size of the company from 2 or 3 persons to multi-sectioned departments such as Avon has to coordinate its many successful cosmetic items (where packaging provides the selling power).

Packaging Director

Whatever this function is called, it is a responsible position headed up by an individual with a thorough knowledge of the industry. It is normally a top executive job and one that has full responsibility for all facets of the packaging integration into the product manufacturing process. In a large organization, the Director must know all aspects of the operation with an obvious slant toward packaging.

Perhaps the best training for the Director is to have worked either in packaging purchasing, research or manufacturing. All three functions are even better because the director must be a generalist and not a specialist. He must be at home with current FDA legislation as well as with ways to meet escalating packaging material costs.

Purchasing

One of the most important functions that report to the Director is *purchasing*. From specifications derived by other departments under the Director, purchasing's job is to provide advice and service in the acquisition of specified packaging for all departments of the division and to maintain desired inventory levels of packaging. It's not an easy job! Purchasing must use the specifications provided them to locate, develop, and select sources of supply. All standards imposed on the material by the specification are also generally included in the purchase contract. Also purchasing responsibility involves all other contract elements such as quantities, price, and logistics.

Most purchasing departments are headed up by a purchasing manager and a staff of buyers or purchasing agents. Often the only person a material supplier meets in the user firm is the buyer of the material being sold. Large firms such as Kodak or Warner-Lambert have highly organized purchasing departments, each with a discrete function.

Professional purchasing personnel often aid a material supplier. They usually serve as the "cleaning-house" for salesmen and are able to direct his inquiry to the proper person in the user organization. One final note: bypassing a user's purchasing agent or buyer is generally unwise. Not only is this unprofessional, but it is actually a cumbersome method to conduct business. Because when the time comes for packaging material purchase, no relationship has been established between the supplier and the person assigned the task of purchase. Price haggling and possible business losses may result.

Product Development

Another department reporting to the Director is the *Package Development Group*. Composed of trained packaging technologists, the function of this department is to oversee technical problems related to the packaging material and to formalize packaging specifications, standards and test methods. Individuals working in this department are generally either trained scientifically (chemists, engineers, etc.) or better still, trained specifically in packaging engineering. They deal with both the material suppliers (through purchasing) as well as their own internal departments (marketing, purchasing, sales, etc.). An essential prerequisite for success in this area is the ability to communicate effectively.

Package Design

No package could be sold without the services of the *package designer*. It is here that the artist meets the consumerist. The individuals in this department are often commercial artists having limited knowledge of both packaging material and process. Reporting to the Director, who often has little or no knowledge of the designer's activities, it is essential that the designer not be divorced from the total system. This is usually difficult since the background of an artist is quite different than that of others working in the firm.

There are many advantages for a product manufacturer in having its own staff designer. Although suppliers often provide free design services to a good customer, their basic objective (and rightly so!) is to design packages to sell their materials. This limits them both in the materials and processes they are able to recommend.

Package Engineering

Finally, but not least in importance is the *package engineer*. Here is an individual with direct responsibility for "making the material run." Trained in both mechanics and materials, this person must guide the mechanics on the line and meet the host of machine problems head-on. His job includes the running of new materials, recommendation of new packaging equipment, cost justifications of new equipment purchases and supervision of machine start-up and installation. It is an essential function for any firm. One problem area in this job is that the person holding the position must be made aware of new trends and be allowed to travel to suppliers or

ar basis. His work should not be limited to ledge of only his firm. If this occurs, the ok and background necessary for future pro- on improvements will be retarded.

Packaging Committee

many small-to-medium user firms, packaging decisions are not made by the Director who reports to corporate management. They are either made by the boss or by a packaging committee. Some firms cannot justify the large expenditure necessary to both organize and maintain a separate packaging department.

The committee method is widely used in the United States and operates with representation from all the areas most concerned with packaging. Typical members of the committee might include marketing, manufacturing, engineering, research, and purchasing. Meeting on a regular basis, the committee ensures an effective flow of communication between all areas concerned. It fosters good-will among the separate departments and is usually very effective.

There is still yet another approach often used by product manufacturers. In this method, a *packaging coordinator* becomes responsible for assimilating all necessary information from brand supervision, engineering, and production. A take-off on this is the use of a *packaging consultant* who provides the specialized knowledge on overall packaging considerations which few individuals within any company have the time to assimilate.

For the senior marketing executive at the very top, where the final packaging decision will be made, the job becomes one of deciding which approach to use. *No single person is capable of bearing the burden of the making the final packaging decision.* The best packaging management is not a simple taker operation. It must be (1) geared to change, (2) creative, (3) innovative, and (4) oriented to facts-figures. It is a demanding responsibility.

MATERIAL SUPPLIER

Along with the growth of the market-oriented approach has come a realization by packaging material suppliers that they must fully understand the industry they are attempting to sell. More sophisticated by product manufacturers has also created the need for people, in the supplier firms, that can "speak the others' language" and relate to the suppliers' customers. This has led to the growth of

technical organizations alongside the commercial, marketing and sales departments within the suppliers firm. A typical method used by a supplier is described below.

Sales Department

Generally heading sales is a National Sales Manager. On his sales map, the United States is divided into various geographical regions (4 or 5) and each region is under the direction of a Regional Sales Manager. Each region, in turn, is sub-divided into districts with the number of districts in a region ranging from two to eight. There is a district sales manager at the head of each. Sales representatives report to district sales managers.

In addition to sales representatives and their managers, some of the larger regions might have one or more technical experts who also report to the regional general manager. These include package designers, artists, engineers, account executives and regional product managers. Each function contributes services to the solution of the customers' problems, and in general, serve as a support force for sales representatives.

Also present in sales are the administrative or sales service personnel. This group may operate through a regional administration manager to a regional vice-president. This is logical, since their services cross all divisional lines, providing the vital inside sales functions so necessary to support outside sales activities.

Marketing Department

The marketing function is the responsibility of a National Marketing Manager. Reporting to him are about six marketing directors and a market planning director. The marketing directors are responsible, through market managers, for the major market areas served by the user firm.

The primary responsibility of markets is to supply both the supplier and his distributors with all the tools necessary to sell to the greatest number of packaging customers. This goal is attained through effective sales programs plus whatever personal assistance may be necessary.

The key function of the individual market specialist is to develop programs aimed at a specific customer group, such as the beverage industry, the dry foods industry, or the meat industry. Program materials supplied by this division include all information necessary to bring about the introduction of new packaging materials. The market managers

also work closely with the advertising department to determine the type and scope of advertisements to use, such as newspapers, magazines, radio, TV and trade shows. They also assist in the preparation of slide presentations and films and arrange traveling exhibits.

Other responsibilities of marketing people include the handling of various packaging exhibits and seminars, assistance in plant tours and working directly with sales representatives in calling on product manufacturers.

Administration and Control

The Administration & Control group, headed by the A&C Manager, consists of three sections: Budget & Forecast; the Division Controller and his staff; and Pricing.

In addition to preparing budgets and forecasts for the supplier, that manager also furnishes and analyzes the many statistics required for realistic short- and long-range planning. The controller, on the other hand, is responsible for the suppliers' adherence to approved budgets, and for all other financial transactions; this includes periodic reports to management and to the corporate controller as requested. Another function of the controller is the establishment of, and control over, accounting systems in the supplier's manufacturing plants.

Pricing, Inventory & Production Control, under a director, has its three functions spelled out in its name. Product pricing, at levels that will ensure adequate financial return on investment, is an exceedingly important function of this section. Product and raw material inventories must be maintained to meet anticipated demands without being unreasonably large; this is another function of this section. The third function, production control, involves the rate at which the many products of the firm are produced, to assure the most profitable product mix. Many products may be produced at more than one plant; production control schedulers must decide where and when they can be produced most efficiently.

Product Management & Technical Services

The fifth department reporting to the General Manager includes product specialists and the many technical experts necessary to support the efforts of sales representatives. This group of people is headed up by the Manager of Product Management & Technical Services.

Product Management, under a director, is divided

into six categories, each under the direction of a product manager who reports to the Products Director.

All these product people have as a major part of their responsibility, the determination of the proper packaging materials for specific applications. They work with both distributor and field sales people to help obtain new customers and maintain existing accounts. They also serve as working links between sales and manufacturing and between sales and research.

The other part of this department is concerned not only with technical services but also with product planning. These two roles are each headed by a manager.

Other Groups

Although not an integral part of the supplier's products group, many other groups within the supplier organization furnish extremely important back-up services. Two of these that should be mentioned here are Advertising and Packaging Research.

Advertising

By an extensive program of national and local advertising through every conceivable media, the sales representative's job is made easier because the firms' name is kept constantly before the buying public. In packaging materials advertising, suppliers buy space in trade magazines and journals to promote standard materials and products. Direct mail campaigns are used to a great extent, especially in the announcement of new or special products. These campaigns, usually created to bring attention to specific materials for specific purposes, take the form of magazine article reprints and ads, letters and brochures.

In addition to preparing advertising materials for publications, radio and TV, and direct mail campaigns, advertising personnel also prepare displays for trade shows and conventions. Point of sale aids, motion pictures and various other forms of promotional materials are developed in close coordination with Product and Market groups.

Packaging Research

The Packaging Research group has three primary goals: 1. To improve existing packaging products and processes; 2. To develop technical packaging data for the company and its customers; 3. To assist customers in individual packaging problems that arise within their own plants.

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Newsletter

FOOD PACKAGING AND LABELING

29 SEP 1980

C.F.T.R.L. MYSC

By

Food & Nutrition Press, Inc.

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Designing the Package

Package design as we know it today is rooted in the economic hardships of the Depression years. The 1920's had been boom years for the print media. Easy dollars brought reams of product advertising in newspapers and magazines. This lavish spending ended with the crash. But manufacturers and food processors soon discovered an economical alternative — the advertising potential of the package itself.

Package design rapidly became a separate profession. The research methods that were pioneered by Walter Dill Scott in advertising were soon applied to package copy, color, shape and size. A revolution in label design and package styling had begun. Products could sell themselves and compete better on the shelf with strong, motivational labeling. As the self-service era emerged and flourished, even more emphasis was put on attractive eye-catching designs. A "depression baby" had grown up fast.

Although package design grew rapidly in the 1930's, its workers actually began their initial activities in the mid-1920's. People such as Robert Gunns, Reco Capey, William Larkins, Robert Dutton, Bernard Griffin, Jesse Collins and Frank Morimer in the U.K., Gustav Jensen, George Switzer, Walter Dorwin Teague and Joseph Sinel in the U.S. and Egon Schmid and Erich Simon in Germany realized that the intensive marketing of products in branded packages demanded top designs.

One of the pioneers in design work was a man named Lucien Bernhard, a German designer newly arrived in the U.S. He developed a certain poster-type style and used it extensively in the early

1930's. Package design grew rapidly in the next decade and by 1955, the era of "total marketing" began. This involved thinking of the package in terms of its overall advantage to the entire distribution system, particularly to the end-consumer. Proper package design now meant that it was possible to sell concepts and ingenuity rather than merely packages. The modern-age had become a commercial reality.

Aspects of Package Design

Food processors must be able to either *specify a package design for a product* or feel comfortable in obtaining the *services of a professional package designer*. Both methods are commonly used; however, it is essential that the answers to the below-noted questions be obtained prior to proceeding with the development of a new package.

(1) Is there a need for a new package?

Change for the sake of change is not worth the trouble. There should be a definite reason for redesigning the package and a definite need for the redesigned container.

(2) What is the primary appeal of the product?

This factor is probably one of the most important to be considered. What market does the product serve and to whom will it appeal. Is it a product of necessity? Luxury? Utility?

(3) Has the product a secondary appeal?

Many products serve varied markets. Often, these markets only become evident after product introduction. By overlooking the secondary appeal, the advertiser may automatically reduce his chances of widening his market.

(4) What is the purpose of the package?

Obviously, the package must be intended to be the vehicle used to sell the product. But it may also have a different function. In a period when many consumers are looking for bargains, the introduction of a large economy package may prove to be quite successful.

(5) What are general design trends?

This calls for an analysis of the whole field of current design. Package design often closely follows the design trends of the time. One can examine a package and usually note the date of its manufacture. In checking design trends, it is essential that the food processor ask himself several questions. What phases of current designs are temporary? What phases seem likely to last? Will it be profitable to redesign the package radically to meet possible temporary changes with the idea that another design can be made as new trends appear?

(6) What are the design trends in the industry?

Should the food processor interested in marketing his product be a design leader and possibly risk failure because of his novel innovations?

(7) Who are the prospects and customers?

Where will the product be used? How will it be used? In what income class are the majority of the prospects and customers to be found? If the market served crosses all income levels, what design effects seem to have the most universal appeal?

(8) How will the package be used in display?

Will it be used primarily on the counter? In showcases? Or on open display tables. By a definite change in the package, the retailer can often be induced to use it more widely on his counters or in his windows.

(9) How will the package be advertised?

Will the package be displayed in the advertisement? What is the general style and theme of the advertising? How can the package be used to reinforce the main appeal of the advertising?

(10) What material should be used?

Is the present material satisfactory? Is it the best possible material that can be used? Are new materials available which are more suitable for use in the package than the ones currently used?

(11) Can the package be made profitably?

Will the design make necessary costly changes or developments in packaging machinery? Can the design be put on the labels? Will the design be compatible with an outer shipping container?

(12) Is there a family of products?

Some processors appear to favor the introduction of a product line with similar designs. A corporate

image is thus obtained and purchasers can relate the similarly designed packages.

(13) Will the consumers like the new package?

Consumer testing is extremely important. Far too little testing is done and often advertisers who have spent thousands of dollars in market research of the other types spend next to nothing on testing package design. There are many sophisticated test methods used by design firms and they should be used.

Graphic Design

The package must be able to convey its message through graphic design. Printed copy describes the contents and how to use them. Illustrations or symbolic designs convey direct or indirect messages about the product and its quality and value. The arrangement of these elements is extremely important to the need for attracting attention to the package and communicating the desired information. Copy should be simple, legible, complete and attractively arranged to harmonize with the overall package design.

It is best to use a minimum of copy and allow the package to depend on color imagery, design and symbols to get the sales message across. The lettering used should supplement the package's color plan. Color has a specific effect on legibility. Black lettering on a yellow background is very legible; however, yellow on white is poor. Also, copy is less legible in capital letters than small ones and a word is more legible if the space between the letters is larger than the type thickness. For the part of the message containing ingredients, weights etc., it is extremely important to use good legible colors. The purchaser must not think that the label is concealing these facts.

Copy can also be included to convey a certain message. A home-grown quality image can be conveyed by the use of fancy, curly lettering. To modernize a product, graphics can be given straight, simple lines.

Color in Graphic Design

The vast majority of package users can never hope to master even the rudiments of color as a science. Color is a quality by which objects can be differentiated to the eye independent of their form. It is a property of light rather than that of the object, although the molecular composition of the object determines its color by means of the light vibrations returning to the eye. In perfect darkness

ects have no color. White light is a mixture of all etral wave lengths and it can be divided into its ponents by prisms or water droplets as in the iliar rainbow.

There are many rules that apply to the use of col- n package design. Here are several as guidance use in packaging.

1) *Red*. Red has been called the most scientific- powerful color because it "stimulates the estive system, the circulation of blood and uses the forces of self-preservation." It signifies length and virility and causes people to look at the kage. In most cases, the use of red must be efully controlled. Light red is a cheerful color but k and bright red is more likely to induce depres- n and irritation. Cherry red is sensuous. As red omes darker, it becomes more serious and ressing.

2) *Orange*. Orange is often used on many kages associated with the physical and it is of a re subtle quality than red. It expresses action l has the ability to communicate. It looks clean ppetizing and has an intimate character.

3) *Yellow*. Yellow denotes light, gaiety and mth. It is a cheerful color and is the loudest and ghtest of all colors. Pale yellow looks dainty; den yellow is active; green yellow is sickly; and a p strong yellow suggests sensuousness.

4) *Pink*. Pink is suggestive of femininity and p affection. It lacks vitality and gives an impres- n of intimacy and gentility. If a bright magenta k is used the viewer tends to have a frivolous ad.

5) *Green*. Green is a quiet, refreshing color. It is ociated with youth, growth and hope. Being an emanding color, it neither evokes passion nor ness. When darkened to olive, the same color omes a symbol of decay and rot.

6) *Blue*. Blue is a cooling and subduing color. It ers from green relative to tranquility, since en suggests earth-like quiet but blue is a heaven- e quiet.

Color can also be used as an attention-getter. pro- use of color can go a long way in attracting a sumer to a package. The best attention-getters males are black, red, orange, green and yellow; females, they are red, green, black, orange and ow. Attention value in color is also controlled by size of areas. Certain color combinations that l win attention for a small package may seem ish when placed on a larger one.

play Units

The sales value of a package usually depends to a

great extent on how the unit is displayed. The best designed container can do only a mediocre job if it is put high on a shelf in the back of a store. Since at the point-of-sale the package does its most important work, display is a factor in package design.

There are four types of display to be considered:

- | | |
|-------------|------------|
| (1) Shelf | (3) Window |
| (2) Counter | (4) floor |

Shelf. Will the package fit onto the shelf easily? One of the inherent disadvantages with the tetrahedral package is its rather unique shape mak- ing shelf-stacking difficult. In addition, consumers easily disrupt a stack of packages leaving an un- sightly selection.

Shelves have become fairly well standardized in most retail outlets, with the result that packages of certain heights may be stored behind counters if they do not fit in readily with shelf sizes.

Counter. It is on the counter that the package does its most important sales job, because it is there that the package first comes into contact with the customer.

Visual Displays. It is very critical that the packaged product be properly displayed and be visually attractive to the customer. Often this is dif- ficult for opaque packages such as cans. An effec- tive visual display can often do wonders in selling a product.

Floor Displays. In open display, the general ef- fect desired is that of lack of symmetry. Retail men found some years ago that the average person dislikes to select a package from a symmetrical display. The packages were either jumbled together or where stacked, avoided pyramid or cube effects.

Swiss Milk Package

An interesting example of a planned program of subtle communication is a Swiss milk package. Before the "Tetra-Pak" unit was introduced to the Swiss market in competition with glass bottles, the new package was carefully evaluated with Swiss consumers.

Color was considered to be the main aspect in- volved in consumer communication. Tests revealed that in order to denote cleanliness and purity, light colors, white background and modern design motifs should be used. Consumers associated red, orange and brown with fat. In order to play this down and suppress the idea that milk is fattening and high in cholesterol, these colors were avoided in favor of light colors. To communicate that milk is a thirst quencher, various shades of blue with fresh, light colors were found to be best. To communicate that

milk does not have an unpleasant taste, vivid color contrasts were found to be best. To imply good value, excellent technical design and multicolor printing detail were employed. Childish designs were not used in order not to limit the age appeal through infantile connotations. Similarly to overcome the feeling of many men that milk drinking is effeminate and childish, strong masculine and vigorous colors were used with linear and angular designs. *Red* is considered a masculine color. To appeal to a broad range of social economic levels, a clean graphic design was used with the avoidance of cheap colors.

The net result was a modern looking package with blue, white and red colors. It met with excellent success in the marketplace.

Marketing to Foreign Lands

Packaging for export is a highly specialized subject. No food processor should ever attempt to put his American packages directly into foreign circulation without first consulting retail authorities in the countries to which he intends to export.

In Asiatic nations this is most important because certain colors are definitely associated with native superstitions. There are nine factors that a firm must adhere to in formulating a package for export sale. They are:

- (1) *Climate*
- (2) *Languages*
- (3) *Literacy*
- (4) *Symbolism*
- (5) *Trade/Living Customs*
- (6) *Shipping Conditions*
- (7) *How Will the Product Be Used*
- (8) *Color*
- (9) *Package Inserts*

An additional point to consider is that different nationalities associate different colors in different ways. In the U.S., red is indicative of cleanliness, but in the U.K., red is the least clean of all colors. In Sweden, blue is masculine, but in Holland, it is a feminine color. Red and blue are the most popular colors. In Italy, a land with plenty of sunshine, red is a preferable color. The U.K., Sweden, and Holland prefer blue and golden yellow. Blue is serious in Holland, but green is a serious color in the U.S. Red is very popular in the Balkan nations.

OTHER NEWSLETTERS IN FOOD SCIENCE AND NUTRITION

FOOD, NUTRITION AND HEALTH NEWSLETTER

by JOHN E. THOMPSON, President, Thompson Farms Company, Chicago, Illinois

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Newsletter

FOOD PACKAGING AND LABELING

By

Food & Nutrition Press, Inc.

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ADVERTISING AND SELLING FOODS

"Advertising is like learning — a little is a dangerous thing."

Phineas T. Barnum

This month, the focus will be on how to advertise and sell the *package and product* made by the food manufacturers. Often this is the most difficult task for the producer. He usually lacks both the sales and marketing knowledge needed for his products' success. Perhaps this is the reason that the vast majority of new products fail. In a recent survey conducted by the A.C. Nielson Company on fast turnover consumer products, the interaction between the product package was responsible for about 53 percent of the failures of unsuccessful new products. Within this category there were scattered instances of the product being too far ahead of the times or of wrong package size, etc. Advertising quality, media, appeal (including product name), accounted for another 10 percent of these failures. Over 60 percent of all new products fail because of a combination of both *poor product/package* and *advertising quality*.

The Early Years

It all started with the pioneering articles of Walter Dill Scott. His series, "the Psychology of Advertising" was published in the *Atlantic Monthly* in 1903. Scott, then a professor of psychology at Northwestern University, pointed out the defects of advertising copy. He stressed the need for cheerful advertisements. His articles shifted the focus from explaining how an article worked to describing the pleasure it would give the user. In short order,

the advertising profession began to adopt the terminology of the psychologist.

Around 1910 departments were started in many agencies to gather market data nationwide. Advertising plans based on these data resulted in copy derived from detailed knowledge of the product, its market and its uses. Slogans were soon adopted and advertising agencies began to prosper.

After World War I and the post-war recession, there were boom years for the print media. Easy dollars bought reams of product advertising in newspapers and magazines. This lavish spending ended with the 1929 crash. But manufacturers and food processors soon discovered an economical alternative — the advertising potential of the package itself, and how better to exploit the sales advantages of a properly designed package, but by the proper use of advertising.

The Advertising Agency

Most advertising agencies operate on a retainer basis and do offer a wide variety of skills to the food manufacturer. On their staff, there may be package designs, marketing experts and perhaps even a packaging technologist. Although the latter is still a rarity, there are several large agencies that either employ or have as consultants, top-notch package development specialists.

An advertising agency can perform all the above jobs or some of them. Costs are generally high and it often is preferable to "pick and choose" which jobs one has an agency work on. The important factor to remember is that the agency should work closely with the designer and the packaging director in

making packaging suggestions at the outset of the development program. Personnel at the agency should be allowed the opportunity to offer their suggestions on writing package copy. All too often this is done piecemeal and as an afterthought by the manufacturer. But copy writing is a skill and the talent of a copywriter often means the difference between success and failure.

An additional responsibility of the advertising agency is to coordinate the design program with the advertising campaign, and to make certain that they are both promoting the same selling message. When this has been done successfully, one of the basic contributions that an advertising agency can offer has been met!

The Package In Advertising

Based on all the previous discussions and concepts and whether one retains an advertising agency or not, there still remains a definite need to create "an identity for the product." Consumers should request the product in the retail store.

Creating the "package profile" is not an easy task. There are several simple rules to follow, but they are by no means fool-proof!

1—*Show the Package in the Advertising* — the possibilities of using the package in all types of advertising are limitless. It is usually desirable to show the package in relation to the product it contains. Also, it is more effective to show the package in use rather than by itself. This not only suggests consumer acceptance, but an action illustration has greater value than a picture of the package alone.

2—*Show the Package Opened* — where the package is shown without any illustrative accessories, an effect of liveliness is often obtained by showing it opened. This rule cannot be applied universally. An opened can is not normally an inviting subject for illustration, but a well-designed can unopened has definite decorative value. An open package has a specific value to the consumer in that it invites sampling with obvious purchasing.

3—*Use Color* — it is rather obvious, but the use of color in advertising offers many benefits to the food manufacturer. The chief reason is to establish identity and recognition value that may be carried into the retail store.

4—*Design the Advertisements Carefully* — don't create foolish ads that are not life-like simply to highlight the package. A butler holding an opened can of vegetables for the admiring gaze of a roomful of guests in evening gowns is hardly truthful. Such an advertisement was actually published in a leading magazine.

Using the package to its best advantage in advertising "is no mean trick". There are three methods possible:

1— Feature the package as the main point of the advertisement.

2— Make the package an accessory feature to the main illustration.

3— Use the package merely to establish identity.

Frequent photographs of the product temptingly arranged on its package entice shoppers who automatically relate the printed picture to advertisements in all the other media.

There is really no best method to select from the above three categories. The package is part of a general marketing plan, and how it is used in that plan depends not on the package, but on the basic thrust of the marketing strategy.

There are also several points to consider when illustrating the package in advertisements. One of these is to show the package tilted. None of its side should be parallel to the margins of the advertisement. The package may also be related to a coupon by some layout device.

The Media

The main advertising media are: 1-Television, 2-Radio, 3-National and local press, 4-Display, and 5-Trade and technical press.

The selection of which media to advertise a package/product is obviously quite important. Both the package design and package shape are critical factors in media advertisements.

Television is the most important advertising media. It tells us what to buy and where to get it. It shows how to use certain foods and where to buy them. A package design which is quite effective when seen in full color on the retailer's shelf may have little or no impact when seen in black and white TV (it will probably be quite acceptable on color TV!). Television advertising must be able to implant the brand name and register the package identity with the consumer. If it fails to do this, it is unsuccessful. Some of the most popular campaigns succeed only in promoting the use of the whole product group at the same time. Although competitors are generally friendly, they do not expect to profit on someone else's advertising. Clear identification of the package can improve advertising effectiveness. This is not only true of the specific design, but also the name. When the Reynolds Metals Co. advertises "Reynolds Wrap", the use of household foil tends to increase. Many consumers think of the name "Reynolds Wrap" as generic and to them it simply means household wrap. Here is a case where

tradename has clearly been identified with a specific product line.

While television combines visual and audio impact, radio has audio impact only. Television, radio and the national or local press are ideal for advertising consumer goods but industrial goods are best advertised in the trade or technical press. On occasion, it is desirable to have industrial advertising in the prestige national dailies in the belief that they are widely read by top management. In 1979, *The Wall Street Journal* ran several advertisements relative to the retort pouch and its uses. This was an excellent example of an ad intended to reach a wide cross-section of executives.

It is important to note that packaging or advertising changes are not made independently, without consideration of the effect one may have on the other. A simple thing, such as a change in color, may make it unrecognizable on television. If a sudden lack of contrast occurs, the colors may blend and appear as a new one. One that hardly represents the package/product.

The Dual-Use Package

One of the most effective methods possible to advertise a product and keep it in the "eye of the consumer" is to design and produce a package that has multiple uses.

There are many examples of dual-use packages. One of the earliest was the one-pound peanut butter can which could (and often was) used by children as a sand toy after the product was consumed. Other examples include a mustard-jar that later becomes a beer stein, a bean pot that holds smoking tobacco or cheese packages that become drinking glasses. There are two types of dual-use packages. One variety has no relation between primary and secondary use. Examples include a liquor bottle that later becomes a table lamp. In this case, only if one retains some type of product identification can the product remain in the consumer's mind. The second category has a closely related use. Examples include a foil tray holding a cake mix which is also used to cook the cake after certain necessary ingredients are added.

There are many important advantages for a food manufacturer in using a dual-use package. It affords added sales appeal at time of purchase. It serves to remind the user of the product long after it has been consumed and, in the case of a gift package, of the giver. Finally, the more ingenious dual-use containers have a distinct novelty value.

Before everyone rushes off to purchase and use dual-use containers, let's discuss some concrete

disadvantages! Let us assume that a food manufacturer has developed a container which, when emptied, can be used as a cigarette box. This container costs several cents more than a simpler container. Psychologically, the average consumer hates to discard an obviously costly container. She knows that if the container is expensive she is paying something extra for it. Unless she is going to use it after the product is used she may turn to some other product where there is a better value for the money. It follows then that the most satisfactory dual-use container is one that bears no extra cost and is just as convenient as an ordinary package.

Child-Appeal in Packaging

While an ad campaign can and often does appeal to children, a properly designed package can do wonders as an aide to advertising efforts.

Children have an inquisitive nature and both advertisements in the media and package design must be able to exploit that characteristic. An excellent way to take advantage of this is to offer prizes as sets in the package. The most popular items used are baseball-players, fish, dogs, Mother Goose subjects, national heroes and movie stars.

The theory behind the child-appeal package, as distinguished from the package for such child-use products as candies, is that the manufacturer can create an interest among children in some feature of his package so they will demand more packages to complete their collection of stories, pictures, etc.

NEW PACKAGE

[Flex-Can]

1 —[A "Flex Can" retortable pouch in bulk foods, designed to hold foods now packaged in no. 10 cans and bulk frozen foods, has been developed by Reynolds Metals Co.

The bulk food size pouch is capable of holding from 16 to over 100 ounces and, with a protective carton, is expected to prove less expensive for food processors than the no. 10 can and label.

The "Flex-Can" bulk foods pouch's thin profile permits more efficient processing, and food in the package does not require expensive freezing or refrigeration.

Additional savings can be achieved through space saving in storage and disposal and freight savings in distribution by elimination of much of the excess liquid in a product fill.

The thin profile of the "Flex-Can" permits re-

duction in processing time that results in foods that taste better than canned foods. Heat-sensitive nutrients are not affected as greatly, and food color and texture are also superior in the "Flex-Can."

Reynolds Metals Co. and many food processors are conducting durability tests of the bulk foods pouch with fills over 16 ounces for submission to USDA. The ultimate goal is to have the complete package, with USDA approval, by mid-1980.

Meals Ready to Eat (MRE)

While on the subject of the retort pouch, it is interesting to note that the MRE (Meals Ready To Eat) program of the U.S. Government is fully on-stream. If any readers have questions as to the program and the use of the retort pouch in the program,

there is one organization that offers answers.

For 34 years this group (Research and Development Associates) has been providing strong liaison between the Department of Defense, industry and the universities. It helps make commercial and academic know-how available to the military, and keeps industry and the universities up to date on military capabilities as well as needs. It continually works with the U.S. Army Natick R&D command in applying research results to development activities. For more information about this organization, readers should write:

Col. Merton Singer
Executive Secretary
Research and Development Associates
90 Church Street
New York, N.Y. 10007

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This Newsletter will discuss current and projected trends in prices of a large number of food ingredients and of some packaging materials. Among the ingredients to be covered are sweeteners, milk products, cocoa, fats, vitamins, soy derivatives, eggs, flour, coffee, potatoes, meats, fruits, and vegetables. Other ingredients will be discussed when significant changes occur in their supply or pricing. Special articles discussing long-term trends in groups of food materials will be featured occasionally. Suggestions for replacement of costly ingredients by less expensive materials will be given, when appropriate.

SUBSCRIPTION INFORMATION

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Newsletter

FOOD PACKAGING AND LABELING

By

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PRINTING THE PACKAGE

Packages may be printed by a wide variety of different methods. Although these methods are very well-established and their techniques have been known for many years, the current decade and its special characteristics will impose even more stringent demands on "printing the package."

The 1980's appears to be a decade in which both the cost of materials and their availability will suffer. Capital investment is declining leading to a slowdown in the development of new plant capacity. To counteract these forthcoming shortages, more and more demands will be made on package designers to innovate more sophisticated packaging — "More has to be done for the food processor for less".

During the 1970's, the packaging industry started moving in this direction as far as surface requirements, such as graphic images and tactile forms were concerned. The 1980's will only accentuate this trend. The most difficult area is the material, structural requirements sector. Here is the supreme test for the design profession — the need to provide logical, deep, organic structural packaging answers. The goal is to motivate the user at the lowest logical cost, with superior protection of the product.

Good graphics are expensive; however, the most appealing design loses all its value if it is *improperly* or *poorly printed*. Poor graphics is worse than no graphics. A complete understanding of both the design factors inherent in packaging, as well as the mechanical methods required to reproduce these

designs are essential in today's market. And with the 1980's being a "tough decade", this knowledge and its application becomes doubly important.

LETTERPRESS — RAISED PRINTING
SURFACE TECHNIQUE

There are three types of letterpress presses used in the packaging industry, i.e. platen presses, flat-bed cylinder presses and rotary presses.

Platen presses operate by conveying both the material to be printed and the type form on flat surfaces. These two surfaces, known as the platen and the bed, open and close somewhat like the jaws of a clamshell. The bed holds the type form; the platen holds the material. As the jaws of the press open, the type form is inked and a sheet of the material is fed to the platen. As the jaws close, the sheet is printed. When they open again, the printed sheet is delivered and a new sheet is fed to the platen.

On most presses the amount of impression or squeeze is controlled by an impression lever. The ability to regulate the amount of squeeze makes the platen press quite versatile.

There are several restrictions in using a platen press: (1) Only sheets can be printed, and (2) Only one color at a time can be printed. Since only cut sheets can be used, economics may become an important factor. Also, when printing cut sheets made of a laminate exhibiting differing moisture absorption i.e. paper/foil, severe curl may become a problem. The advantages of using this technique are that it is well-suited for small runs and simple, small

forms. The platen press can also be used for embossing, die cutting and carton scoring and creasing.

Flat-bed Cylinder Presses generally have a moving flat bed which holds the form while a fixed rotating impression cylinder provides the pressure. The material, held securely to the cylinder by a set of steel clamps known as grippers, is rolled over the form as the bed passes under the cylinder. As the bed returns to its original position, the cylinder is raised, the form re-inked, and the printed sheet delivered.

On vertical presses, both the form and the cylinder move up and down in a reciprocating motion. This cuts the usual two-revolution flat-bed motion in half; the impression cylinder makes only one rotation for every printed impression.

Only sheets can be printed by the flat-bed methods and the same problems that can exist for platen presses may also occur with flat-bed cylinder presses. Two colors can be printed on one side and a full range of work from simple black and white designs through very high quality photographic reproductions can be accomplished successfully. The method is applicable for medium-size runs.

Rotary Presses have both a cylindrical plate carrier and a cylindrical impression member. It is by far the most efficient of the three types of letterpress machines and is used mainly for long runs. The rotary press can print either sheets or rolls in a continuous web. For this type of press, the plate must be curved to fit the cylinder. The sheets are fed between the two revolving cylinders or the web runs continuously between the two cylinders. Up to five colors can be printed at one time and the long set-up time makes it suitable for long runs.

Letterpress printing is used for printing labels, bags, folding cartons, plastic films and corrugated containers. Coated boards and papers often yield the best results with letterpress. The inks used generally have a pasty consistency which makes the process a difficult one to apply to most plastic films except rigid PVC and cellophane. The latter films are fairly stiff and not so susceptible to damage by the high pressures which have to be applied.

FLEXOGRAPHY — RAISED PRINTING SURFACE TECHNIQUE

Widely used for the printing of all types of plastic films, flexography is a high speed technique. A thin, fast-drying solvent based ink is applied to the film surface by means of a flexible rubber plate (or stereo) with raised characters on it. This is mounted

on a plate cylinder by means of an adhesive. Ink is transferred to the rubber plate from the ink fountain via a rubber inking roller and an anilox roller. The anilox roller is an engraved stainless steel roller which holds ink in the recesses of the design and acts as a metering device to the rubber plate. The process offers a combination of high speed and fairly low printing plate costs but stereo preparation does not lend itself to the production of very fine halftones.

The inks used in flexographic printing are mobile and the solvents volatile so that multi-colored printing at one pass is possible using several printing heads on a single impression cylinder. Oven drying is essential to achieve high printing rates, and up to six colors can be printed. A significant disadvantage of flexography is that it is difficult to reproduce fine detail. Good tonal effects and sharp images are difficult to attain. Fine type may fill in. It is limited to screen rulings of 65-85 lines per inch. Finer screens require much slower press speeds to prevent filling in of the spaces between halftone dots.

GRAVURE — DEPRESSED PRINTING SURFACE

Rotogravure (or gravure) consists in inking an engraved printing roller which then transfers the ink directly on the material to be printed. The engraved design is made up of a series of tiny cells of varying depth so that differing amounts of ink are picked up by different parts of the roller. Excess ink is removed by a doctor blade. For all practical purposes, rotogravure is a continuous-tone press. It is only in the light and some medium tones that the cell walls are visible after printing and then only under magnification. The size of the individual dots can be seen from the fact that the screen size used to produce the cells on the roller is about 60 lines per cm which means a total of 3600 cells to the square cm. Even finer screens are used for high definition work.

With multi-color work, it is essential to dry between each color application. After passing through a hot-air blast, the film passes over a water-cooled roller to prevent transference of heat from the drying chamber to the next printing unit, where an increase in temperature would cause the volatile ink to partially evaporate and dry in the cells of the engraved cylinder before contacting the web. The cooling roller also hardens the ink from the previous station which was rendered tacky by the application of heat sufficient to melt the resin content of the ink.

Disadvantages of rotogravure printing include the high initial costs of the etched metal rolls, and the printing speeds which are somewhat slower than those obtainable with flexographic processes. Normal rotogravure processes are of the order of 18-120m/min. The main advantage of rotogravure printing is that it does produce high quality, multi-color, fine-detail printing.

The high initial cost of the etched cylinders often is a deterrent to small manufacturers of food products. The costs involved in purchasing cylinders for a 5-6 color print job may run upwards of \$5,000. These cylinders remain at the packaging material suppliers plant and are the property of the food processor. When the food manufacturer changes packaging suppliers, he must purchase a complete set of new cylinders even though the ones in his previous suppliers plant are his property. They are never forwarded nor sent to other plants. Many food processors believe that this is an excessive charge, but if there is an interesting product to be marketed and it has an outstanding potential volume, a package printer may often absorb the cylinder charge. This is particularly true if the business becomes desirable. Certainly, one should request this of the supplier and in the current economy, more and more gravure printers are absorbing these somewhat excessive initial cylinder charges.

OFFSET LITHOGRAPHY — SAME PLANE TECHNIQUE

In addition to a metal printing plate and an impression cylinder, offset presses utilize an offset cylinder which holds a rubber blanket. In operation the plate cylinder is inked and the image is then transferred to the rubber blanket of the offset cylinder. The substrate is then passed between the rubber blanket and the impression cylinder and the image transferred from the blanket onto the substrate.

All offset presses are rotary and may be either sheet-fed or web-fed. Because of the nature of the process and the use of the offset cylinder, it is impossible to alter the cut-off length of web-fed stock. The cylinder size of a given press cannot be changed and the length of a sheet which can be cut from a roll of paper is fixed. For this reason, most presses used for package printing are sheet-fed rather than web-fed in order to maintain the desired flexibility necessary to print different-sized sheets.

Offset lithography is widely used to print labels, folding cartons and sheet metal for can-making. It is

also used for printing rigid plastic sheets, foil, paperboard and paper wrapping. Makeready is minimal; the wraparound plates can be shifted slightly for proper register. The resilient rubber blanket compensates for the varying thicknesses and textures of paper stocks, largely eliminating a source of trouble in other printing processes. A wide range of papers can be used. Halftones can be printed with solids on both rough and smooth papers. Sometimes it is difficult to maintain uniform color throughout a run.

DRY OFFSET — COMBINATION LETTERPRESS LITHOGRAPHY

Letterset or dry offset utilizes the same kind of relief plates as wraparound letterpress, but instead of printing directly, it prints onto an intermediate blanket as in conventional offset. The difference is that because of the raised characters on the plate, the dampening operation is not required and all the disadvantages of the use of water encountered in conventional offset are avoided.

The plates used are made of zinc, magnesium or a photopolymer. Two commercially available plates are available from DuPont and Eastern Kodak.

SCREEN PROCESS STENCIL TECHNIQUE

The screen process is characterized by transferring an image through a printing plate rather than from one. The screen used has porous portions on it, allowing for the passage of ink through it onto a substrate and reproducing the desired image.

The screen is placed over the substrate, a supply of ink applied, and a squeegee is used to force the ink through the screen. There are three types of presses in use today — manual, semiautomatic and automatic. All of them contain the basic elements of a stencil or screen, a squeegee and some type of back-up plate or fixture to hold the substrate in place.

The manual press consists of a table having a hinged frame which contains the printing screens. The object to be printed is held below on the back-up plate and the ink is applied manually by means of a hand squeegee. Both frame and object are held stationary in this method.

Semiautomatic presses can be of the flat-bed type or of the cylinder type. The simple, flat-bed type utilizes a mechanical squeegee. In the cylinder press the substrate is passed under the screen by means of

a rotating cylinder which is usually vacuumized to hold the substrate in place. In the case of printing on cylindrical objects, the cylinder may be replaced by the object itself which will be rotated beneath the screen.

The automatic machine works on exactly the same principle as the semiautomatic variety, except that the machine does not stop after an object has been printed. The squeegee moves continuously, or

in the case of a stationary squeegee the screen moves continuously. The operator is used to feed the machine only. If no object is in the machine, it stops automatically.

Table 1 summarizes the most important characteristics of the printing methods discussed. In the 1980's, simply specifying that a package should be printed 5 or 6 colors is not enough. A knowledge of printing methods and technology is a prerequisite to success.

Table 1. Printing Process Characteristics.

Characteristics	Letterpress	Flexography	Offset Lithography	Gravure	Screen
Transfer image to substrate	Raised printing area (Relief)	Raised printing area (Relief)	Printing area and non-printing area same plane (Planographic)	Printing area depressed (intaglio)	Porous screen (stencil)
Type of printing plate	Metal type and/or raised heavy plate (metal)	Raised flexible rubber plate	Thin metal plates; water receptive and ink receptive	Copper/chrome cylinder or wrap-around plate	Steel screen
Inking system	Ink-printing plate-Substrate	Ink-printing plate-Substrate	Ink-printing plate-rubber blanket-substrate	Ink-cylinder-doctor blade-substrate	Ink-stencil-squeegee substrate
Substrate form	Sheets or roll (web-fed)	Rolls (web-fed)	Sheets or rolls (web-fed)	Rolls (web-fed) bulk; sheets occasionally	Sheet and rolls (web-fed)
Type of ink	Paste, viscous, for packaging usually oil-based; dry by oxidation, fairly heavy application; slow drying	Fluid, alcohol or water-based; alcohol dries by evaporation; water dries by evaporation and absorption	Similar to letterpress (dries by oxidation) <i>not</i> as viscous; use only about half as much	Fluid-rapid drying-solvent based or water based	Very viscous-drying oils- very heavy laydown-heavier than letterpress.
Type presses	Platen Flat bed cylinder Rotary	Rotary	Rotary	Rotary	Flatscreen, rotary screen

BEVERAGES & CONTAINERS

In a recent study Predicasts, Inc. projects that Americans will drink over 600 million gal. of bottled water in 1990 — 2½ gal. per capita — up from 282 million in 1976/78.

Coffee, now the third most popular beverage in the U.S., will show a decline of almost 30% by the end of the decade. Consumption will drop from 6 billion gal. to 4.5 billion — a little over a cup a day for each person over 18-years.

Container shipments will increase at only 2% an-

nually and reach 180 billion units in 1990. Metal containers will account for 41% of the 1990 market; glass for 39%; paper for 12%; and plastics for 8%. Plastic will erode paper's current 17% market share as it penetrates the one-liter soft drink container market and finds increasing acceptance in liquor and wine packaging.

For further information contact Predicasts, Inc., Attn. Debra K. Potts, 250 University Circle Research Center, 1101 Cedar Ave., Cleveland, Ohio 44106. Phone (216) 795-3000.

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TEST MARKETING

One of the most critical factors facing the food manufacturer is the test marketing of new products. Market tests, in-use tests, and other commercial experiments in limited geographic areas are conducted to ascertain the feasibility of the full marketing program. In this stage, design and production factors may have to be adjusted as a result of test findings. And at this point, management must make a final decision regarding whether to market the product commercially. Two major problems often encountered in this stage result because (1) competitors can devise ways of disrupting or countering the research, and (2) they may take advantage of the time lag caused by test marketing and introduce their own version of the new product without pretesting it.

The test marketing of ITT's new retort pouch clearly illustrates the pitfalls inherent in a testing program. Initially introduced in 1977, the pouch was withdrawn within one year (it has now been reintroduced). ITT executives claimed that their competitors bought up all their test market samples and literally sabotaged the program. Since no meaningful results could be obtained, the product was taken off the market until a more substantial supply was possible.

Test markets may be divided very broadly into two categories. One category is that of the new product and involves trying out not just the product itself, but also all the different elements that together constitute its personality and marketing approach. The other category is that of the established product. Here the test is intended to evaluate some change in the existing product, per-

sonality or marketing approach.

In this context, it is often useful to use the term "marketing mix" as meaning the whole complex of variables that constitute a product and its marketing. In the case of a new product, the test market tries out *all* the various ingredients in the marketing mix. In the case of an existing product, the test market evaluates a change in only *one* ingredient in the mix. In both cases, however, the test is designed to find out whether a certain course of action is profitable.

Before a new product or package is launched, one or both of these categories are tested. It becomes evident that: Test marketing may be defined as the testing in the marketplace of one or more elements in the marketing mix of a product in order to determine their effectiveness on a large scale as aids to profitability. The test market, a scaling down of a larger market, is intended to scale down the loss if the test should prove a commercial failure.

Test Marketing New Products

This is perhaps the best known type of test market. The aim is to test *all* the various ingredients in the marketing mix that together contribute to the product's achieving a profitable level of sales. These include:

- (1) the product itself
- (2) the uses to which the product is put by the consumer, and consumer attitudes towards it.
- (3) *packaging* — both from a functional and "design" point of view.
- (4) price structure — trade, retail and manufacturer.

- (5) distribution
- (6) promotion
- (7) media
- (8) is the product sampled and repeat purchased?
- (9) is the manufacturer's marketing and sales organization performing as well as it might be?

In other words, to test-market a new product is to use a technique, or rather a group of techniques, designed to try out the marketing of the product without the expensive risks of a full-scale launch. It is the business of pre-testing something that is to be *sold*, and as such is very like the more familiar process of pre-testing something that is to be *made*.

No product should be test marketed until all practicable means have been taken to perfect it and its marketing approach in advance. All too often marketing strategies are devised without proper thought and research and the new product is put into test as quickly as possible. If questions are raised as to some point, the answer is given that it is only a test and all wrongs will be corrected by the time of national launch. This attitude assumes that the product is the only thing being tested, and that all the other elements which make up its impact on the trade and the public will somehow be evolved separately while the product itself receives a fair trial. But the better approach is that the fewer elements in the marketing approach needing modification during or after the test, then the test itself gives better results for the cost. Its implications for a later full-scale launch will be clearer and more dependable if those elements in the product and its marketing which require alteration are kept to a minimum.

Test Marketing Established Products

Test marketing of established products is undertaken when it is desired to test some change to the existing marketing mix. This inevitably involves *comparison* of results achieved in the test with those achieved elsewhere. And as with the comparative testing of new products, the best results will be achieved if only one variable is introduced in to the marketing mix. For example, a manufacturer might wish to ascertain whether heavy advertising would profitably increase the sales of his product. He could institute a heavy campaign in one area of the country and compare the results in the rest of the country where advertising continued at the same level. But if at the same time he wished to learn whether he should use a blue pack or a red pack, he would have to conduct two tests with the same heavy advertising campaign in each, one with the blue pack and one with the red pack.

Comparative testing of existing products is therefore a useful means of gauging the effects in the market-place of modifying some element in the existing marketing mix. It should be noted that the variable under test must be an important one for it to be worth the trouble of a test market, and for the results of its introduction to become clearly apparent during the relatively short period of the test.

Planning A Test Market

When the decision is made to start a test market program, a suitable locality must soon be found. Questions arise as to whether the town is a truly representative one and the results obtained meaningful.

An obvious example is that sales of the type of product under test should reflect those in the country as a whole. Consumer acceptance of different products can vary widely from one part of the country to another, and blind selection of a test market with such a bias could obviously destroy the significance of the test's results.

It is therefore wise to compare possible test areas with the national market, looking for regional variations in all facets of consumer usage and attitudes to the product type in question, and in the marketing mixes of competing products. Ideally, the area corresponding most closely to the national situation should be selected.

The reliability and usefulness of the results will also depend on the amount and accuracy of the demographic, sales and research data available, and the extent to which the test market may be treated as a self-contained marketing unit. It is not surprising, therefore, that these somewhat stringent preconditions are met by only a few available sample markets. They include:

- (1) some towns, often based on local newspaper delivery or sales areas. But these are difficult to define as self-contained, since some spending power in the surrounding countryside goes to the town, some to local shops, and some to other towns. They also lack their own television stations, and only in some cases have research facilities ready set up. However, good results are often cheaply achieved by using towns from different areas together in the test.
- (2) television areas. These have no media lack or shortage of research facilities. However, they tend to be expensive, and only a few areas — not the cheapest — may usually be regarded as representative of the country as a whole.
- (3) groups of retail stores. Here, of course, there

are no advertising media and no permanent research panels. Moreover, there are grave problems in projecting results up to full-scale market levels, owing to the unrepresentative character of the trade — and therefore consumer — samples employed, and the fact that a group of stores is not a self-contained marketing unit. The advantages are cheapness and the close surveillance of consumer behavior at the point-of-sale.

Other available markets are geographic areas, sales areas, truck delivery areas, particular trade types (e.g. multiples), etc. But which is the most suitable in a particular case? The planner has to balance a number of factors.

Choosing the Method of Promotion

An important factor in the planning of the test market will always be the chosen method of promotion, and relating this promotional effort in the test area to the national situation. In particular, this means media promotion. If the effect of television advertising is the element in the marketing mix under test, or if television advertising is essential to selling the product, then the area for the test will almost certainly be a television area, and it is a reasonably simple operation to relate expenditure on television in one area to a similar level of expenditure on the national network. If, however, the product is being promoted in the press or by other media, it will be very difficult to reproduce a national effort in a test area, either in coverage or in the quality of the advertisements. It follows that it is most difficult to equate a local effort in local newspapers or in posters with a corresponding effort in the national newspapers. The advice of the media planners may well be to do as well as possible under the circumstances.

The Company's Own Operations

In choosing a test market the planner has to take account of factors deriving from his company's established operations and nature. Special factors peculiar to the company could easily influence the test results if not taken into account at the planning stage. Some of these special factors are:

- (1) *representation*. All sales forces have their key men and their weaker links. In small areas both strong and weak representation can produce incorrect results.
- (2) *delivery*. Timing and efficiency are particularly important with perishable products. There would be little point in testing in the part of

the country where perhaps the product is not at peak — or at any rate a typical level of — freshness.

- (3) performance in key retail and wholesale outlets. This is one of the biggest difficulties in planning test markets, as many areas are dominated by certain traders, and there is not much point in testing in one area where the major retailer or wholesaler does not handle the product. Also many of the biggest retailers, for their own good reasons, are unenthusiastic about stocking a line in only a few of their shops — those which happen to fall into your test market. It is often advisable, therefore, to avoid those areas dominated by these really large retailers, or at least to take account of their reactions when assessing results.
- (4) background of promotion in previous years. An obvious bias can be created by heavy company promotion, either above or below the line, in the months or years preceding the test; or again by lack of promotion: both in comparison with the national effort.
- (5) historical factors. Many companies find sales difficult to get in certain areas. This will be well-known, and again must be taken into consideration.

Comparative Test Markets

If a particular element in the marketing mix of an existing product is under test, the structure of the test plan must isolate this element. The most common example is the test of advertising to a certain level in one medium, perhaps television or a local newspaper. Here the area of the test is predetermined by the area of transmission or circulation of the station or paper selected. The test involves advertising in the medium to a stated level and then calculating the effect on sales within the area of transmission/circulation. Similarly a test of a pack in a new size, for example, might take place in a "delivery area", since sales in the existing size must not be influenced outside the area, and existing packs must not be sold within the area during the test. The results of the test in such cases will, of course, be compared with the performance of the unchanged marketing mix in the rest of the country.

Comparative testing becomes complicated when two or more test market operations are conducted in order to ascertain the most preferable of various alternative courses of action: for example, the more profitable of two new prices, the more profitable of two levels of promotion, or even the most successful of three types of consumer offer. In these cases, two

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or three test areas are required, and in order to compare results, the areas must be as similar as possible. Ideally, the only differences between the areas should be the element in the marketing mix under test. The areas should compare well in terms of:

- (1) population
- (2) class profile of population
- (3) urban density
- (4) trade structure
- (5) typicality of total market
- (6) typicality of company operation
- (7) representation and delivery
- (8) special factors (e.g., water hardness or ratio of people living on pensions)

However, such perfection of comparability is in practice very difficult to achieve.

The smaller the area (town)

- the lesser the investment.
- the lesser the effort at all levels of the company operation
- the less given away to competition

The larger the area ("sales" up to "television")

- the easier it is to watch the true effect of promotion.
- the more realistic it is in comparison with a national operation.
- the more likely are the results to be followed by approximately similar behavior on national sale.

These very broad considerations should give a lead to the size of the test market.

Some Test Marketing "Don'ts"

Having planned the area, and the method and level of promotion, the remaining aspects of the planning function might be summed up in a series of "don'ts". Here are a few "don'ts".

Don't allow the Sales Force to be overenthusiastic: An Area Manager far from the Head Office suddenly faced with the Marketing Manager and Sales Manager running a brand new line on test can often lay on an effort out of all proportion to what could be achieved on a national launch.

Don't overpromote: there may be only one or two key customers in a test area, and the cost of filling up these customers with the product under test may seem quite small, but again it could not be repeated on a national launch.

Don't use special product or packaging: a test market is just as much a test of production capabilities and of packaging capabilities as it is of sales and marketing effort: the product should come off the machines in exactly the same way as it would on national distribution and should be packaged in exactly the same materials.

Don't let the test run into seasonal unbalance: although the test may have begun at a normal time of the year, it could easily be thrown by running into a festive season or an off-period for the product.

Don't forget that your competitor may not be testing: he may be out to undercut you hard, and is not bound by any of the rules that must be observed for a true test market. Competitive action must be watched very closely, and if judged to be excessively heavy, or indeed excessively light (for a competitor may not bother about your small test market but might certainly react to a national effort) allowance must be made in drawing conclusions from the test.

Length of Time Required

Finally, in planning the test, the length of time it must be run before true conclusions can be drawn must be clearly stated. It is a great temptation to accept the results of an initial successful sell-in to the trade as proof of a successful test market. In fact, a test market must run for sufficient time to measure not only the sell-in to the trade, not only the initial purchase by the customer, but also repeat purchases by the customer for as long as is necessary to establish a pattern, by which time it should also be possible to measure the effect of competitive reaction, if any.

Table 1. The Ten Most Commonly Used Test Markets

1. Erie, Pa.
2. Syracuse, N.Y.
3. Birmingham, N.Y.
4. Wichita, Kan.
5. Fresno, Ca.
6. Spokane, Wash.
7. Fort Wayne, Ind.
8. Little Rock, Ark.
9. Peoria, Ill.
10. Portland, Me.

Table 2. Common Test Market Errors

1. Over-attention
2. Incorrect volume forecasts
3. Establishing unrealistic in-store conditions
4. Incorrect media translations
5. Changing objectives after the results are in
6. Selection of the wrong test markets
7. Failure to take into consideration the atypicality of test markets
8. Assuming competitive environment will be the same nationally as it was in the test market.
9. Failure to conduct consumer research
10. Insufficient attention.

Newsletter

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PACKAGE MATERIALS COSTS

Contrary to popular opinion, there is no direct relation between specific product and package price. The superb Huntley and Palmers' biscuit tins of the early 20th century cost many times that of the product — ordinary biscuits. Expensive appliances are often packed at an outlay of less than 5 percent of their total production cost. It is the product category or commodity that normally determines the package material cost. But there are other important factors in the overall picture — development costs, the role of the selling environment, the material costs, production factors, distribution costs, storage/handling charges and losses due to damages, returns and terminal inventories.

Product Category

Package material costs vary considerably — from below 5 percent for commodity foods such as flour and sugar to rates of more than the cost of the product itself for various cosmetics and toiletries (see Table 1). Most detergents have package costs of between 5-10 percent while cigarettes carry a packaging cost of over 10 percent. For products whose cost exceeds that of the package, small decreases in package costs often may result in considerable savings in the overall price structure.

Developmental Costs

Most packages have to be developed and formalized in a series of costly operations. Very few packages escape this time-consuming process. The

Table 1. Package Material Costs as a Percentage of Total Product Cost for 100 Samples of Each Commodity.

Commodity	Under 3%	3-5%	5-10%	Over 10%
Sugar	100	----	----	----
Margarine	----	----	100	----
Cement	6	11	68	15
Detergents	4	27	38	31
Tobacco	17	----	50	33
Cigarettes	----	----	----	100
Butter	38	13	12	37
Electric light bulbs	23	37	3	37
Toilet soap	18	12	29	41
Flour	----	50	----	50
Tea	33	----	17	50
Confectionery	----	25	25	50
Cocoa	----	17	33	50
Biscuits	----	----	50	50
Chocolate	33	----	----	67
Groceries	----	----	33	67

steps involved in package development include design, prototype construction, test marketing, specification development, quality control implementation and initial startup. The highly touted retort pouch has borne a fantastic development cost amounting to more than \$5 million whereas a confection that is dump-packed in a polyethylene bag has a development cost that is almost negligible.

The general procedure in the packaging industry is for the material supplier to absorb the initial development costs and then spread them over the costs of several years' packaging material products. The unit pack price will then include a figure to cover the development costs. A supplier may also include his development costs in an overhead figure

and spread it over all the materials sold. In the last several years there has been a noticeable decrease in the price of polyester films. This has been due to significant improvements in manufacturing and the initial development costs already being absorbed by the producer firms.

Designing the package is an important part of the development costs. Manufacturers may hire outside designers or handle the problem in-house. Often, an outside designer's fee is quite negligible in comparison to the total advertising appropriation. A workable figure for most packaging design projects is about 10 percent of the total advertising budget which in itself could amount to about 5 percent of gross turnover. This figure amounts to one-half of 1 percent of gross turnover.

If a manufacturer feels there is a risk involved in agreeing to pay in advance for design work, then one could integrate a "break clause" in the contract. Assuming that an entire design project would cost \$5,000 and there is a "break clause" inserted into the contract stating that if at the end of the first presentation stage, the client was dissatisfied, only half the total fee would then be due. This clause also works for the designer since he is protected from adhering to his original fee if the work becomes more than originally planned. Raymond Loewy, the designer of the "Lucky Strike" cigarette package and other noted projects once said, "If you want me to do a big thing like a tractor, there are so many obvious things you could do to make it better looking that I would charge very little. But if you want me to redesign a sewing needle, I'd charge \$100,000. After all, how can you improve a needle?"

Package Selling Environment

If the product or its package is considered to be paramount, then anything done to draw attention to it, or to eliminate visual competition is helpful. The package can often directly influence the sales of a product, particularly in a supermarket environment. Often a component of the total packaging, e.g., a display carton is specifically designed for this purpose alone. Package size, shape and surface graphics are all important factors in determining whether a product will succeed or fail in the retail store. An added consideration is whether the package should have any sales promotional features. Should it be a bonus size package or a coupon pack, a premium package or a pack-on premium?

Packaging Material Costs

Most packaging users only consider their initial

material cost as the total cost of their package. Although a very important factor, it is only one part of the entire economic picture.

A supplier's quote generally states the cost per pound or per/1,000 square inches or per 1,000 impressions. It does not state nor can it state the internal cost per unit pack. The actual cost to the user of the packaging material is obtained by calculating items such as volume, special packaging, freight, and storage/handling.

The larger the order is, the greater the savings on material cost. Often, packaging material suppliers will offer "breaks" at certain levels. This takes into account start-up costs for the order in the supplier's plant. The quantity of the order also may dictate the specific manufacturing operation. Extrusion favors long runs since the start-up scrap is substantial. Long runs are also more economical when printed by gravure instead of flexography. The cost of an etched gravure roll favors longer runs. Since flexography uses rubber plates, its initial costs are less and smaller runs are more desirable. There is a break-even point above which gravure printing gives a lower unit price than flexographic. The exact location of this point depends on the specification of the material and on the exact type of equipment used.

Most packaging material is delivered to a user on large pallets which may be stretch-wrapped or wire-banded. Bulk palletization is an economical shipping method for both the supplier and user. Often, this method is not satisfactory. Various users might specify that the material arriving in their plant be individually wrapped in polyethylene or inserted into separate corrugated cartons. Special core labels might be required. When special packaging is requested, costs invariably increase.

Shipping obviously costs money. Air shipment or ordering minimum quantities often mean upcharges to the materials user. The unit price is affected by the distance the user's plant is from the supplier. In situations where returnable packing is utilized, such as pallets, the supplier may collect these on a regular schedule. Aluminum cases for flexible packaging rolls are also returnable. When these are shipped to the suppliers' plant, credit is given to the user for their safe return.

Rarely does an order arrive at a user's plant without any intermediate storage or handling. A supplier may store the users material against a release for delivery; a public warehouse may be used or an internally owned local warehouse may be used. This type of service costs a premium to the material user. This is normally reflected in the initial material cost given to the user.

Production Costs

Production costs include all the operations required to produce the final salable package. This category includes the fixed costs such as labor, machinery depreciation and overhead. Variable costs include the cost of the raw materials and packaging used.

Fixed costs can be lowered by more efficient machinery utilization or savings in the labor used. Variable costs are reduced by savings in raw materials or packaging.

Machine efficiency is a critical factor in determining the financial success of a finished package. As an example of the cost factors involved in calculating machine efficiency, consider the use of two different types of cartons — *glued* and *unglued*. Machine A uses unglued cartons while Machine B uses glued cartons. Assume that:

	Machine A	Machine B
Cost	\$30,000	\$20,000
Speed (pkgs/min)	100	150
Labor	1 operator	1 operator
Material Cost/1,000	\$15.00	\$19.00
Floor space (sq ft)	400	300

Additional factors to consider include the cost per hour for the different aspects per machine. After the final calculations have been made, it shows that the unit package cost for machine A is less than Machine B when 1 million or more cartons are run. This is in spite of the lower cost of Machine B and its 50 percent greater production speed. The predominant factor is the cost of the packaging material. Here is a case where the economics inherent in proper material selection precludes the production speed and machine efficiency. Changes in packaging material specifications also directly affect overall packaging machine efficiency. It is critical that samples be run on a trial basis to ensure that the production order will be economically successful.

Labor costs are usually higher when the packaging operation is not automatic or even semi-automatic. Direct labor costs are the wages paid to the machine operators and other personnel handling the packaging materials from the time of its arrival to the time the finished package is shipped from the plant. Indirect labor costs include both clerical and administrative.

Effective supervision also plays a part in achieving high production rates. Often, incentive bonuses, based on production, are used as a method

of increasing production levels, while this is a good method, it may be dangerous. Quality may suffer in the haste needed for increased production.

Packaging losses or shrinkage refers to quantity rather than size and is the difference between the units of packaging material received and units of packed goods shipped. It is a vital factor in overall production costs.

Some loss is unavoidable. Materials which are sampled destructively by quality control are forever destroyed. There are also large losses incurred during machine start-up either at the beginning of a shift, after a break, or after a size changeover. When down-time is encountered either due to machine or product problems, more loss is experienced.

The losses mentioned are rather small if considered individually, but can involve significant amounts of money when added up over a period of time. The normal accounting procedure is to allow for a standard "shrinkage" factor. (Converters also encounter this factor in the manufacture of packaging materials). This will vary from material to material, e.g., for corrugated cartons, it is usually less than one percent, while for flexible packaging materials, the value can range as high as five percent, even for an efficient operation. In the flexible packaging operation, potential losses may occur during the initial quality control inspection, machine start-up, filler adjustment, line samples, off-quality production units, splice down-time and material remaining at the end of the core. Unusual problems can play havoc with economics and greatly multiply the shrinkage factor.

Warehousing Costs

Just as the materials' supplier stores his material, the package manufacturer normally ships the packaged product to a warehouse for storage prior to final distribution. Certain products have specialized warehousing conditions that add cost to the final unit. Frozen foods must be kept under deep freeze conditions at all stages of storage and distribution. Confections containing chocolate require controlled temperature storage in the summer in normally hot sections of the country. For certain frozen fruits and vegetables with short harvesting periods, enough packages must be kept frozen to fill demand on a regular basis.

Refrigerated and freezing warehouses are available on a rental basis and are located in all the major cities in the U.S.

Package shape has a direct influence on storage costs since it affects overall space utilization. This becomes important in the case of frozen foods,

where the cost of low temperature storage is high. Package strength is another critical factor which can affect the costs of storage. In present-day single-story warehouses, products can be stored either in racks or dead stacked in cartons up to the roof. This requires that the outer pack and its contents, stand up to large stacking heights. If the more expensive method of rack storage is used, then the outer carton strength is not important.

Transportation Costs

The costs of shippers and shipping are determined by reference to the various freight cost schedules published by the industry. Rule 41 contains the minimum standards for corrugated boxes. It defines the minimum acceptable standards to be used for rail shipments. It is essential that the corrugated container used not merely meet Rule 41 regulations, since the shipper must also comply with the conditions imposed by the specific product. Presently, nearly all corrugated shippers are made to meet Rule 41. If Rule 41 is not met, there are scheduled upcharges for freight tariffs. In addition, a common carrier has the right to refuse to handle products packed in a shipper of less strength than the minimum specified in Rule 41.

Freight rates are also fixed by commodity. The factors involved are the value of the commodity, the average density in pounds per cubic foot as shipped

and the distance involved. Light-weight products have higher rates than dense ones. A carrier must receive at least a break-even income per truck or railcar employed.

Terminal Inventories

No package can last forever, when the time comes for either a redesign or use of a completely new package, there will inevitably still be old packs in the distribution line that must be sold. Should these be sold to a close-out operation or left on the shelf? Can the manufacturer afford to leave old and obsolete packages out in the field? These are hard questions to answer, but they have been faced and will continue to be a decision-making task for packers of large volume products.

Advertising Costs

A less direct factor affecting packaging costs is the advertising cost for an article. This may exceed the packaging cost for many goods and at times packaging costs may be reduced to provide more money for sales promotion. This could lead to under-packaging, and the best distribution of expenditure has to be decided to ensure both good packaging and adequate advertising. The package itself has advertising possibilities and this is of obvious importance.

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PACKAGE ROLE IN PRODUCT SUCCESS

Many people still feel that the product is paramount to success and is the basis of a profitable business. Although this is partially true, ignoring the savings and opportunities inherent in good packaging often means both profit loss and product failure in the marketplace. Packaging is not some end-of-the-line wrapping-up process. It must be fully coordinated with product design and be recognized as a factor which influences sales, costs and profits. The package must be developed to suit the product. There are very few packages available as "on-the-shelf" items. Most are "tailor-made" for the product and only intended for that specific item. The packaging of "Silly Putty" aptly illustrates individualized packaging.

"Silly Putty," a childrens' toy, made of a silicone derivative, was originally packaged, out of economic necessity, in plastic "eggs." These egg-shaped packages were economical and easy to ship in inexpensive cartons which came from the Connecticut Cooperative Poultry Association. Later when the company was able to reexamine their packaging, another container was tried briefly. But top toy buyers protested loudly and the original egg package was re-introduced. Something about the brightly colored eggshells seemed to identify the toy inside as "fun."

In the technical area, packaging materials specifically developed for one product often cannot be used to contain a different product. Even the same product i.e. ketchup, mustard, made by different manufacturers, cannot be packaged in the same material.

The two areas that the package contributes to the marketing success of a product are its ability to sell the product (graphics) and its ability to contain the product for a satisfactory shelf-life (technical).

Package Graphics

The role of package design has been fully covered in previous *Newsletters*. Its importance as an aid in marketing may be illustrated by the following case histories. In all the examples discussed, product success would be impossible without a salable package.

Kirin Beer. Although Kirin Beer is the largest selling beer in Japan, it had until recently been marketed in the U.S. solely through restaurants. The company's decision to go after U.S. grocery sales coincided with stricter labeling laws and Kirin's use of a new, more elongated, non-returnable bottle. The new shape provided a stronger, lighter bottle which was a substantial advantage for an export beer. It was necessary then, to redesign the neck label in order to list the ingredients and find a shape more compatible with the taller, narrower bottle. Kirin also markets a premium brand beer in Japan called "Mein Brau" and its designer was called in to work on this new objective. After extensive studies showed that the old heavy-foil neck labels were anathema to waiters and waitresses because their stiffness made it difficult to remove the cap, it was decided to keep it simple to avoid interfering with the main label. Later, the main label was also redesigned by reducing the number of typefaces from six to one, refining some details and changing the emphasis from "brewed in Japan" to Kirin beer.

The drawing of the "kirin," a mythological creature resembling a combination of horse and dragon, was also clarified.

Since it was important to preserve the Kirin symbol, but not detract from the main label, the final neck label, after numerous trials with colors or with colored bands on gold, was a deep band, silver foil printed matte gold with a very narrow, glossy gold border framing the slightly pointed bottom. The small Kirin symbol was printed red while the brand name and "The Beer of Legend" under it were both done in specially designed script printed green. The rounded main label was lithographed on silver foil in white, red, green, and glossy gold.

Because of this extensive redesign for a newly emerging market, Kirin noted a 30 percent sales increase on the East Coast during the first year and a 50 percent jump on the West Coast and in Hawaii.

"Pockit" Fruit Drink. In this case, a newly developed package concept was merged with nostalgic graphics to create a line of highly successful soft-drinks.

Introduced in 1979 by Shasta Beverages, "Pockit" was packaged in the German "Doypeck." Composed of an aluminum foil laminate, the "Doypeck" is a stand-up pouch rarely used in the U.S. but extensively used in most European countries. Shasta Beverages purchased the American distribution rights for this package and planned to use the concept for the first time in the U.S. for soft-drinks.

The drinks were also new. Advertised as "ten percent real" orange, lemon and apple juice, Shasta was also testing a new product with a new package.

For graphics, an old-fashioned, full-color "orange crate" look was used combining whole fruit, shiny leaves from the trees and a juicy looking half of a cut lemon, orange or apple. The fruit emphasizes the wholesome, edible quality and projects a rich, drinkable appearance.

The novel shape of the pouch gave the designers a larger front to work with than a traditional beverage can. Although it sits on a firm, though oval-shaped, base like a can, the pouch tapers to a flat, horizontal closing which exposes more of the package to front view. A drawing of the package itself with a straw protruding appears on the front panel, creating a mirror effect and showing where the special pointed straw should be inserted above the liquid line. Pouches are sold in six- or 12-packs with the straws.

The graphics are printed in Germany and the pouching is done in the U.S. The graphics are printed gravure, run backwards and upside down, on a clear film and then laminated to the aluminum foil. Use instructions, ingredients, etc., on the back

of the pouch are scatter printed in bright blue. The laminated sheets are then trimmed into long strips. At the bottler, the strips are cut, heat sealed into bottle shapes, filled and sealed closed.

Consumer likes included no spill, no breakage, light weight, easy storage and tasty visual appearance. The advertising agency for Shasta reported that "Pockit" achieved 85 percent purchase in the Yankelovich market test, the largest ever recorded for a new product in its beverage category.

Package Shelf-Life/Development

There are numerous examples of how the package has contributed to the marketability of a product. Proper material selection coupled with machinability often goes a long way toward achieving a satisfactory product shelf-life. One of the most interesting concepts to appear recently has been expounded by Walter Stern, the celebrated designer. He calls it "hybrid packaging." In Stern's view, "hybrid packaging" is an emerging technology which involves the grafting of one packaging form upon another. The net result is that a totally new style emerges.

Examples of "hybrid packaging" include the following.

Pouched Milk. Liquid milk may be packaged in plastic film or laminated pouches. The packaging of milk in pouch form was pioneered in France and has been subsequently introduced to several other European countries. In Canada, over half the population buy their retail milk in pouches. These pouches are then opened in the home by cutting off one corner. The milk is then poured into a molded polypropylene plastic container for ease in dispensing.

Mold/Tray Combination. A large thermoformed plastic tray is designed to serve as a mold into which the filling mixture is poured. The filling hardens, a .010-in. lithographed paperboard lid is heat sealed to the large multicavity tray and is subsequently cut into single bar packages. In this case, the package serves many functions in production, distribution and selling by utilizing thermoformed plastic to form and contain the product and coated paperboard to protect it and display it.

Consumer Perception

The range of packaging materials available today is so wide that very often the manufacturer has considerable difficulty in deciding which packaging system to select for the product. Many tests have been conducted to show that the same product packaged differently is thought of by the consumer differently.

The choice of materials influences the ideas people have about the product. Ice cream in a round polyethylene container appears to possess different qualities from ice cream in a rectangular paperboard carton. When a product is on the developmental boards, careful consideration must be given to its package. Many products have succeeded or failed because of the packaging material used. The package is a part of the product people buy and can, in some cases, dictate the success of the product. To leave consideration of such a crucial part of the marketing scheme until after the product is developed is much too late. It takes time to develop good packaging and more time is obtained by fully coordinating product and package design.

In developing packaging, many marketing programs conceive of the consumer as a simple-minded person attracted to certain package colors and shapes. In "Business Without Gambling," Louis Cheskin summarizes various fallacious ideas that weaken marketing programs. Here are a few of Cheskin's statements.

1. Housewives want the things they buy in pretty packages.

Not true. The housewife gives little or no thought to the package. She is not aware that she actually is being influenced by packages.

2. An effective package is a work of art.

Not true. An effective package is primarily a symbol. It is more like a sign than a work of art. The purpose of a package is to attract attention, to communicate about the product and to motivate the consumer to want it.

3. Consumers resent packages because they think they have to pay for them.

Not true. In an affluent society, even those with fairly low incomes want psychological satisfaction. As Charles Revson once said about the cosmetics industry, "We sell hope."

4. The widely advertised product always outsells the unadvertised product.

Not true. An effective package will bring more sales than a weak package that has the backing of millions of dollars in advertising, provided the effective package has equal display with the heavily advertised brand and is sold at the same price. However, a heavily advertised brand that has an effective package generally outsells the unadvertised brand. The share of the market depends on how psychologically potent and motivating the advertising of the effective package is.

5. A package in many colors is more effective than a package in one or two colors.

Not true. Full color printing is needed for producing appetite appeal or for presenting a natural effect. But the package should be identified by one color, if possible. The symbol is generally more effective if it has the support of a high preference color.

6. Effective packages are produced by engineers more often than by artists.

Not true. The functional aspects of a package are engineered and the symbolic elements are produced by designers or artists. The total marketing effectiveness of the package is determined by means of psychological tests. The psychological factors determine the effectiveness of the package as a marketing tool.

7. Putting your product in a "modern" package will increase sales.

Not true. Some products will be in greater demand if they are associated with "traditional" concepts. It is often advisable to improve the display effectiveness of a package and/or strengthen the symbolic effect without changing its identity.

All food packages must be sold to be commercially successful. And often these packages are in competition with other quite profitable products. In order to meet this competitive thrust, they must be "positioned" against their competition.

Positioning

Positioning was first used in the advertising industry in the late 1960s. Developed by Jack Trout of Trout and Ries Advertising, it rapidly became one of the most talked about marketing and advertising strategies of the 1970s. The concept deals with "not what one does with a product" but "what one does to the consumers' mind" (see Table 1).

One of the first users of this new concept was 7-Up soft drinks. The top two sellers in soft drinks were both cola drinks (Coca-Cola and Pepsi Cola). 7-Up *positioned* itself against these cola drinks as

Table 1. Steps to Successful Positioning.

1. What position do we own?
2. What position do we want?
3. Who must we out-gun?
4. Do we have enough money?
5. Can we stick it out?
6. Does it match our position?

the "Un-Cola." Sales rapidly increased and soon 7-Up became a strong third in the soft drink market as well as the leading "Un-Cola" soft drink. Other early examples included Schaefer beer's ("One beer to have when you're having more than one") positioning itself as the beer for heavy beer drinkers. Avis used an "against" position to battle Hertz and became a widely quoted success story as number 2. The product ladder for rental cars in the early 1970s was Hertz, Avis and National.

Basic to successful positioning is to "find the hole in the mind." The failure of RCA in 1969 to enter the computer field (\$250 million loss in 1971) even though their products were technically superior to IBM was that the company did not take advantage of their firm market in communications. The consumers' mind said that IBM was best in computers.

There are also many situations which involve repositioning the competition. Two successful examples involve "Royal Doulton — The China of Stoke-On-Trent, England" versus "Lenox — The China from Pomona, N.J.," and "Most American

Vodkas seem Russian." Stolichnaya is different. It is Russian." In the first case, the consumer was told that Royal Doulton really came from England and was better than Lenox which is made in New Jersey. In the second example vodka seems Russian to the consumer and the Smirnoff ads and package designs give this impression even though the product is made in the U.S. Stolichnaya is made in the USSR and their ads capitalized on this fact.

An additional factor in positioning is Line-Extension. Proctor and Gamble rarely line-extends. All their products receive a discrete identity and there is no strong corporate identity. Scott Tissue does line-extend; their "Scotties" name was fairly diluted by Scottissues, Scotkins and Scottowels. Many firms fall into the Line-Extension Trap simply because of poorly executed planning. Sara Lee's entrées (\$8 million loss) failed but their frozen baked goods are quite successful. Pierre Cardin wines failed and so did Chanel's line for men. Bic's pens were successful but their pantyhose was a loss. Lifesavers are an almost generic candy but their gum was a failure in the marketplace.

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Newsletter

FOOD PACKAGING AND LABELING

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C.F.T.R.I., MYZORE

By

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CONSUMERISM

"Consumers are very wary, and weary, of false claims, of advertising double-talk, of phony product comparisons, of overpromises, of rigged testimonials, of ersatz products, of shoddy quality, of being ripped off, of intolerable delays in delivery, and, in some instances, of total failure to fulfill.

"Consumers are looking for, and demanding, honest value. They want and deserve credibility and trust. If consumers cannot trust us, they will do one of two things. They will desert us. Or, they will make sure that we are so bound up with restrictions and Government regulations that they can feel safe in our presence."

William E. Winter in *Keynote Speech to Association of National Advertisers Seminar (1980)*.

While consumer protection appeared to evolve as a new issue in the early 1960's, its apparent novelty was deceptive. In its broad form, consumer protection has been a governmental responsibility and a subject of public concern since the earliest years of the Republic.

The seeds that had been planted in the early 1800's began to take root in the 1870's and 1880's. During this time, there were several efforts made by members of Congress to introduce a comprehensive national food and drug law. The first measure, introduced in 1879 was soon followed by the Paddock Bill passed by the Senate in March 1882. Both bills (the Paddock Bill did not even come to a vote in the House of Representatives) specifically protected the medicine makers of the day from any disclosure of their formulas.

But agitation continued unabated. "The demand

for Pure Food laws is growing every year and, sooner or later, in all the States such laws are likely to be enacted" said the Proprietary Association in 1879.

The tide finally shifted when Dr. Harvey Wiley took up the fight for a National Pure Food Law. Raised in an evangelical home, Dr. Wiley applied his moral fervor to the pure food crusade. Like an itinerant preacher, he stomped up and down the country, preaching that "when God's bounty was tampered with, the label should at least say so." But legislative action was slow in coming, and it began to appear that even if a pure food and drug bill passed, it would be full of loopholes and hardly useful. Upton Sinclair's book, *The Jungle* changed the entire situation. In his book, Sinclair revealed the dirty conditions under which America's meat was processed, how inspectors blinked while tubercular carcasses were brought back into the line, how rats and the poisoned bread put out to catch them were ground up with meat for public consumption, how employees now and then slipped into the steamy vats and next went forth into the world as "Durham's Pure Leaf Lard". The public was staggered, and the sale of meat decreased by 50%. Sinclair's revelations, President Roosevelt's agitations and Dr. Wiley's zeal led to the emergence of the Pure Food and Drug Act signed June 30, 1906.

Time was to reveal serious shortcomings in the 1906 law. Nevertheless, the Pure Food and Drug Act marks a turning point in American history. The concept of control over "the purity and honesty of the food and medicines of the people are guaranteed," said the *New York Times* on July 1, 1906. Public opinion aroused by the muckracking

journalists of the day and the era of Progressivism had led to a certain degree of consumer consciousness and reformers began to increasingly talk about the "consumers" and the "common man".

The period between the Progressive era and the New Deal was devoid of any major consumer protection crusades or legislation. The major campaign in these years centered on the standardization of containers and quality grading of foods. In the years prior to World War I, several Acts were passed regulating and standardizing the size of some containers. But containers and packaging did not seem too important in the eyes of the reformers. Their main aim was to establish national standards of quality for food. The passage of the McNary-Napes Amendment in 1930 helped the quality issue and when the "elixir sulfanilamide" tragedy occurred in 1938, the last roadblock for the enactment of an improved 1906 Act was removed.

The "elixir" was a sulfa drug with diethylene glycol as a solvent. It was never tested for safety and it was not until after it was marketed that the manufacturer learned that the solvent was toxic. One hundred seventy persons died as a result of taking this drug. When it was learned that the FDA could act on this situation only after the fact and only because of a technicality (the only violation of federal law was that the drug was mislabeled as an "elixir"), a great deal of public pressure was generated. The result was the Federal Food, Drug and Cosmetic Act which was signed into law on June 25, 1938.

The new law was a tremendous improvement over the original Act of 1906. It set the standard for all subsequent legislation in consumer protection, not only in the U.S. but also abroad. The 1938 Law

- (1) Prohibited foods dangerous to health
- (2) Prohibited insanitary packages
- (3) Established the Food and Drug Administration
- (4) Plugged such loopholes in the 1906 Law as exemptions for compounds with distinctive names.
- (5) Established stiffer fines
- (6) Enabled courts to issue injunctions against repeated violations

Consumer advocates complained about these new provisions. They felt that too many compromises had been made. Rexford G. Tugwell, one of the first consumerists said, "the Food, Drug and Cosmetic Bill as it passed in 1938 was a discredit to everyone concerned with it."

From the days of the New Deal until the early 1960s, consumer protection activity was part of a cluster of issues of major social movement and not a single issue. In 1962, with the Congressional hearings led by Sen. Kefauver, public interest in con-

sumerism grew and congressional action accelerated. Between 1966-1968, over 15 new consumer protection laws were enacted by Congress. Packaging has often been cited as the culprit of the housewife. It has received more than its share of criticism and now faces its greatest challenge in order to meet the ever encroaching demands of the consumer advocates, it is mandatory that the issue be known. If the attacks on packaging remain unabated, it has been extrapolated that the price of packaging could increase far past the cost of the product contained.

The major attacks by the consumer advocates against packaging will follow. These involve the advocacy of new labeling laws, as well as increased activity on environmental issues (to be discussed in a following newsletter).

LABELING LEGISLATION

Nutritional Labeling

Nutritional labeling is required on all food products for which a nutritional claim is made. Certain states require nutritional labeling to appear on all food products. While the concept is undoubtedly a valid one, the issue often becomes confused and expensive to implement.

Label printing is expensive and changes only add to the cost of the final product. Newly etched rotogravure cylinders cost up to \$1,200 a piece and often, several are needed. Redesign adds to the cost. But the greatest cost is borne by the food companies providing the data required for the label. An analytical laboratory must be consulted and a contract issued. Costs of providing adequate nutritional data range between \$1,000-8,000, depending on the type of product. Necessary also are quality assurance programs that verify the accuracy and reproducibility of the data. The Grocery Manufacturers of America calculated the costs involved in nutrient labeling: the average initial costs were approximately \$18,000 for a small firm and up to \$1 million for a large size processor. Quality assurance programs can cost up to \$300,000 annually.

This is for the 37 percent of all Americans who can read and understand what an RDA means! The vast majority of consumers neither know what nutritional labeling means nor do they understand it.

THE DELANEY AMENDMENT

Enacted in 1958 as an amendment to the 1

Food, Drug and Cosmetic Act, the Delaney Amendment specifies that any chemical additive capable in any quantity of causing cancer was specifically prohibited from food products. Well-meaning, but obviously naive, this amendment is today the subject of considerable debate.

Passed over 22 years ago in a time when the sophisticated testing procedures and tools available today were not even on the drawing boards, a "zero-tolerance" in 1958 means little in 1980.

In packaging, the Delaney Amendment has been responsible for the demise of the rigid PVC bottle for alcoholic beverages, the suspicion about PVC in all areas of food packaging and the ban on acrylonitrile-based beverage packages.

A large number of otherwise useful substances, when taken in sufficient quality, will and do cause cancer in test animals. Tests available today are capable of finding almost "anything anywhere". Yet, the Delaney Amendment is still on the books and there is no movement to change it. If any industry or government body attempts to modify the law, the outcry by the consumerists would effectively kill these efforts.

GOOD MANUFACTURING PRACTICES (GMP)

Governmental interventions into the area of food plants are aimed to ensure the safety of packaged foods. The concept was initially instituted because of the failure of several food processors to adhere to recommended technical guidelines proposed by the industry. GMP's for the food industry deal with recommended practices for handling and processing of foods as well as including guidelines for packaging.

What is happening because of the GMP's is a pattern of governmental intervention in food packaging in the interests of consumer safety. Converters of packaging materials have become overly cautious about the material shipped and food processors are concerned about introducing new products. This added, and often unnecessary, attention costs money and these costs are being passed on to an already overburdened consumer.

NEW GUM PACKAGE

A new addition to the gum industry has been the Wrigley Co.'s announcement that they are establishing a new division to manufacture a cheaper metalized paper that could produce \$200,000,000 in annual sales in the next decade.

At the same time, the company's corporate development department created in 1979, is gearing up to take Wrigley beyond its chewing gum products into consumer products.

As yet Wrigley's Wrico Packaging division has no direct competition for the reflective paper that gives the appearance of aluminum foil but resists creasing. Wrigley substituted the new foil for its own gum wrappers six months ago, but its greatest potential lies in converting the labels now used on beer bottles and cigarette packages and a host of other applications.

The Wrico paper is much shinier than conventional products, but it uses less than 1/200th of the amount of aluminum contained in foil wrappers. The manufacturing process, licensed two years ago from a small Spanish printing company in Barcelona, represents a technological breakthrough in the transfer method of metalization, creating significant cost savings and better quality.

Wrigley's expansion into new impulse-purchase products, such as candy or mints, will use the same distribution and merchandising channels that Wrigley's gum uses. Wrigley will either purchase these new products by acquiring other companies or develop the products internally.

Meanwhile, Wrigley must decide what to do with "Overtime," its latest product. In test market for seven months, the gum with a liquid center has failed to meet company goals.

A breakdown of the gum market is as follows.

<u>Company</u>	Overall Gum Market (U.S.)
Wrigley	33%
American Chicle	27
Life Savers	23
Others	17

<u>Company</u>	Sugar-Based Gum Market (U.S.)
Wrigley	67%
American Chicle	25
Life Savers	4
Others	5

FDA AND USDA PROPOSALS

Proposals by FDA and the USDA to more closely define what are "reasonable variations" in net weight of packaged foods take a big step toward solving this longstanding problem. But the two agencies do not totally agree, and some questions remain.

The Proposals are open for comment until Nov. 6,

and a host of comments can be expected both from packagers and from State inspectors who have long questioned the "reasonable variation" permitted by federal law.

The "drained weight" standard appears to have been shelved. USDA suggests alternatives for listing a product's usable liquids versus its nonusable liquids and also alternatives on whether liquids absorbed by the packaging material should be included. This pertains particularly to meats and poultry. USDA says it will develop "objective, quantifiable standards" based on the weight of samples from each production lot.

USDA takes no cognizance of moisture loss in foods for which there is data.

A rather complicated schedule of allowable moisture losses is being developed by FDA. Frozen fruits and vegetables packaged in cartons would be permitted loss of 1 percent of the labeled weight; soft, ripened cheese up to 3 percent; and flour in paper bags up to 4 percent.

If there are other products which claim moisture loss as a factor in weight variations, processors will be invited to submit data to justify allowances.

Whether all this will satisfy State inspectors remains to be seen.

BIODEGRADABILITY PUT TO REST

The lingering notion that biodegradable plastics would somehow be a contribution to society was recently discussed in a brochure issued by the Plastic Bottle Institute: *Plastic Bottles — Durable or Degradable*.

"The concept of degradability", says the brochure, "raises questions concerning practicality and safety . . . the primary function of bottles and cans is to protect the integrity of the contents.

"It is doubtful that the federal government would permit glass or plastic bottles or metal cans to be used to package food, beverages, or products if those containers had perishable characteristics."

The idea that photodegradable plastics would self-destruct in sunlight when littered is dismissed as patently impractical and the point is made that a bleach bottle exposed to sunlight on the back porch, if made of such a plastic, could be a leading menace.

As to disposability, a telling point is that if

plastic bottles contained an ingredient that made them biodegradable they could not be recycled like other plastic bottles. Just one degradable bottle would spoil the batch. And such bottles would have greatly reduced value as a heat source in incineration of other solid waste.

NEW RETORT ENTRY

Magic Pantry Foods of Hamilton, Ontario, Canada is presently building inventory of a new food product packaged in a retort preparatory to a U.S. introduction later this year in early 1981. Magic Pantry is a unit of Unilever Biscuits, a British-based conglomerate that also owns Keebler Co.

Magic Pantry is only two years old. Sales success in Canada and an infusion of corporate capital have stimulated its interest in the U.S. market. It will join ITT Continental Kitchens brand and Kraft as a la Carte. The introductory markets have not yet been identified.

TWO BIG PACKAGING SHOWS IN 1981

With all readers geared into the 1980 Packaging Show in Chicago, it becomes doubly important to remember two additional shows to be held in 1981. These are *Interpack '81*, to run May 14-20, 1981 in Dusseldorf, West Germany and *Converflex*, to run May 19-23, 1981 in Milan, Italy.

For several years, the biggest packaging show in the world, triennial *Interpack* is getting steadily bigger. More than 15,000 visitors from at least 30 countries are expected to attend. They will view 1,500-plus exhibits of every possible technique in packaging and package-making. A special pavilion under the sponsorship of the U.S. Department of Commerce will include many well-known supplier names. Would-be exhibitors and visitors should hurry to delay in firming up their plans. Both exhibit space and hotel rooms are fast disappearing.

Much smaller and more specialized but still promising much of interest, *Converflex '81* will be the first international trade show devoted exclusively to production and converting of flexible packaging materials. It underscores the growing importance of this segment of packaging.

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BRAND NAMES

Introduction

Although many in the advertising industry feel that a brand name should describe the product, be short, unique, easy to pronounce and have graphic appeal, few names meet all these criteria. "Mr. Clean," "Green Giant" and "Head and Shoulders" are excellent examples, but names such as "Easy-Off" and "Deep Clean" are not especially unique nor do they offer much in graphic possibilities. And a name such as "Men-E" is not only difficult to pronounce but hardly descriptive of a shampoo.

The graphics of a brand name also normally utilize trade characters, which can be defined as created symbols such as animals, cartoons, people, birds and other animate objects. There are many examples — Hamm's beer "bear," Borden's "cow," Morton's Salt's "girl with the umbrella," Quaker Oats "Aunt Jemima" and others. Sometimes the wrong symbol may be used. Proctor and Gamble, learned in the 1960's that the frivolous cartoon character "Jifaroo" it created to promote "Jif" peanut butter was not appropriate for a nutritionally important sandwich filling. These characters must also be periodically updated to conform with the style of the time. The cow of Borden, "Elsie," has gone through several appearance changes since her original artistic inception. There have been six "Betty Crockers" since 1936. And the "umbrella girl" of Morton Salt has also been modified to conform with more recent times.

David Ogilvy calls the brand mark "a first class ticket through life" and issues one to each of his clients, deliberately designed to raise their social

status. Choice of brand names, packaging, texture of cartons, style of typeface each make their distinctive contribution to the success of a package. A brand image consists of more than beliefs; it has about it an aura of past associations. If used successfully, the consumer has the product deeply ingrained in her mind and may answer as the child did when asked the following questions by her grandfather, "Susie, which product brushes teeth whiter?" "Colgate's, of course, Gramp." "Which product washes clothes cleaner?" Without a moment's hesitation: "Tide," "Which coffee gives the best value?" "A and P, and now goodnight Gramp."¹

Brand names and characters have become an integral part of American homes. When there were allegations that there never was a Mrs. Smith, Kellogg Co.'s subsidiary, Mrs. Smith's Frozen Foods Co. quickly promoted their pies with a TV commercial featuring Mrs. Smith's son, who founded the company. "I'm proof she was real," Mr. Smith says on the TV spot! The stories behind many of the more popular characters are reflective of "Americana at its best." They also serve to help the development of new names that could very well capture the imagination of future consumers.

In the U.S., registration of trademarks began in 1870. Prior to this date, the subject while not yet a federal matter was a product of common law and the distinctive symbol could be defended in the courts. The fiercely competitive patent medicine industry, with a history of upstart challenging established proprietor, made judicial history in this domain. Many of the trademarks used for patent medicines never changed, even though the formula, maker and

¹From *The New Yorker* (1951) from *The Sound Track*.

even advertisements changed with time. Radway's ministering angel and Lydia Pinkham's maternal countenance were known to generations.

The Quaker Man

Although the Quaker Oats Company obviously feels that its distinctive "Quaker Man" trademark is unique, its origin probably lies in patent medicine history.³ Pitchmen in some Quaker costume vended remedies with much thee-ing and thou-ing. These merry gentlemen, more thespians than doctors, were got up somewhat in the style of Elbert Hubbard. The Quaker gimmick caught the public fancy so well that a leading patent medicine of the day was "Dr. Flint's Quaker bitters." On the label of the bottle appeared a Quaker man standing and exclaiming the virtues of his product.

Aunt Jemima

"Shrove Tuesday, Shrove Tuesday
'Fore Jack went to plow
His mother made pancakes,
She scarcely knew how.
She tossed them, she turned them,
She made them so black
With soot from the chimney
They poisoned poor Jack."

From a *Shrove Tuesday Pancake Feast*

Of all the familiar trademarks, *Aunt Jemima* is one of the most appealing and expressive. Her beaming face has created a legend and endowed a rather common product with an appealing warmth while establishing it firmly in the marketplace. She suggests abundance, pleasure and happiness, and the consumer relates these to the product in the package.

The first pancake mix ever made was formulated by Chris L. Rutt in 1888 an editorial writer on the St. Joseph, Mo. *Gazette* and a friend in the milling business, Charles G. Underwood. After countless experiments, they developed a mix using hard wheat flour, corn flour, phosphate of lime, soda and salt that, when milk was added and the batter cooked, produced pancakes that one of the first tasters later described, "I ate the first perfected Aunt

Jemima pancake and pronounced it good!"

A trademark and package design was soon needed to reflect the festive spirit that had always been associated with the pancake. The latter had long been associated with Lent and as a substitute for meat. In the autumn of 1889, Chris Rutt found his name and place in American history by attending a local vaudeville house.

On the bill was a pair of black-face comedians Baker and Farrell. The show-stopper of their act was a jazzy, rhythmic New Orleans style cakewalk to a tune called "Aunt Jemima" which Baker performed in the apron and red-bandanna headband of the traditional southern cook. (The full verses of "Old Aunt Jemima" appear in: Haverly, J. H. "Haverly's Genuine Colored Minstrels Songster," Chicago 1880, p. 13.) "Old Aunt Jemima" began one of the most popular songs done by Billy Kersands, the famous black minstrel of the 1870-1900 era. By 1877, Kersands had performed the song more than 3,000 times and had improvised three different texts for his audiences. One of the popular 1875 versions used the following lines:

"My old missus promise me,
Old Aunt Jemima, oh, oh, oh (after each line)
When she died she-d set me free,
She lived so long her head got bald
She swore she would not die at all."

Kersands went on to become the highest paid black minstrel of his time. His astounding popularity was partially based on his mainstay song, "Old Aunt Jemima" and "a copiousness of mouth and breadth of tongue that no white man could ever expect to rival."

Rutt immediately decided that "Aunt Jemima" was the name for the new pancake mix since it just naturally made one think of good cooking. But within a short time, Rutt and his partner ran out of money and Underwood, after registering the trademark, sold their interests to the Davis Milling Company.

R. T. Davis, the new owner of "Aunt Jemima" improved the product and set about to bring "the trademark to life." He sent requests to all his broker friends to be on the lookout for a Black woman who might exemplify southern hospitality and was also poised enough to demonstrate the product at fairs, expositions and festivals. In 1893, Davis launched a gigantic promotion at the World's Columbia Exposition in Chicago. His firm constructed the world's largest flour barrel inside which displays told the story of this new pancake mix. Outside the barrel, an ex-slave named Nancy Green, was hired to

³There are two stories related to the use of "The Quaker Man" by Quaker Oats. One is that it was chosen by Henry D. Seymour, one of the founders of the firm, as a means of connotating purity, quality, strength and manliness. The other is that Seymour's partner, William Heston, while walking in Cincinnati one day, saw a picture of William Penn in Quaker garb. He immediately decided that "Quaker" was a name that would carry connotations of quality and would make an ideal trademark. Quaker Oats has always been inclined to accept Seymour's version.

ing "Aunt Jemima" to life. Nancy Green had long been in the employ of a Judge Walker as a cook, nurse and, coincidentally had made excellent pancakes. Her inherent talent and friendliness made her the ideal "Aunt Jemima" and she quickly became the hit of the fair. Over 50,000 orders were placed for Aunt Jemima Pancake Mix" and at the end of the fair, Nancy Green was awarded a medal.

By 1910, the name was known in all 48 States and had attained such a peak of popularity that many persons attempted to infringe on the trademark rights. The name was upheld so vigorously by the courts that since the last suit in 1917, the name has not been seriously contested.

The Aunt Jemima Mills were purchased by Quaker Oats in 1925. Over a period of eighty years, Aunt Jemima" has become a national institution.

The story of "Aunt Jemima" includes two significant marketing firsts: (1) Davis was the first advertiser to bring a trademark to life. Since the moment of his inspiration, scores of advertisers have introduced living impersonations of their trademarks, particularly since the advent of animated television commercials.

(2) "Aunt Jemima" has withstood the criticism of Black leaders. The "Old Auntie" offered white American openness, warmth, devotion and love. She was an American counterpart to the European peasant, the Earth-mother. The romanticized plantation where Aunt Jemima worked served as a sanctuary where she could develop the family ties that were immune from the forces of progress. In this mythic world, she was "more than a mudder." To modern Black leaders, she evidently does not represent slavery, degradation nor servitude. Her name originated because elderly Black slaves were not referred to as Mr. or Mrs. by younger whites. They were called Aunt and Uncle in order to avoid a Mr. or Mrs. designation. Her long history and inclusion into American folklore has seemingly superseded these characteristics. Her image still appears on the package while the image of her counterpart "Uncle Ben," has disappeared from the widely sold rice package. As a white, this writer simply cannot understand these feelings.

The Cream of Wheat Chef

"Forget the flour. Send us a car of
'Cream of Wheat'".

First orders for "Cream of Wheat"

As a result of having acquired some machinery at a fire sale, two North Dakotans, George Bull and Emery Mapes of Grand Forks found themselves operating a small mill in 1890. Their head miller,

Thomas Amidon, was fond of taking a substance called "middlings" (i.e., farina) home to be cooked up into breakfast cereal. After a year of badgering and coaxing, he persuaded Bull & Mapes to try selling some packaged middlings to grocery wholesalers. Mapes secured a small supply of cartons, and dug around an old print shop he also owned, until he found an ancient woodcut of a Negro chef brandishing a skillet. With this he struck off a small supply of labels, adopted the brand name "Cream of Wheat" because they were using the best and whitest portion of the wheat, and sneaked ten cases of the new item into a carload of flour being shipped to a New York wholesaler. Instead of the indignant complaints anticipated, the only response was a telegram for more of the same, and from that day on the product gained in popular acceptance. A few years later, while having dinner in a Chicago restaurant, Mapes noticed his waiter's infectious grin, and immediately realized that here was an effective substitute for the atrocious woodcut. The waiter was persuaded, for five dollars, to pose in a chef's cap for the famous full-face view which appeared on millions of boxes. Over time, the Cream of Wheat people became tired of that particular picture, and searched widely but fruitlessly for the model so as to secure some other pictures of the same face. Unable to locate the waiter, they continued to show the same view.

Ivory Soap

"All thy garments smell of myrrh and cassia,
out of the ivory palaces, whereby they have
made thee glad.

Psalms 45:8

In 1878, experiments with a formula for a hard white soap without expensive olive oil were capped by a stroke of luck. The new mixture was poured into a blending machine. Apparently a workman forgot to shut-off the power when he went to lunch. The result, a hard soap, floated! Customers who received the accidental batch called for "more of that floating soap." The company soon surmised that intensive whipping had beat air into the mixture, and soon, the accident was deliberately repeated. A name had to be found soon for this new product.

Several weeks later Harley Proctor, son of one of the founders of Proctor and Gamble, (P&G) sat in church one Sunday morning in 1878 struggling to follow his minister's sermon. He was thinking of this new soap developed by his company that was white, pure and floated, called, "The White Soap" by a conservative minded P&G, young Harley

Proctor thought the original name to be too simple and lacking force.

Suddenly he became aware of the words his minister was reading from Psalms 45:8 and spotted the word ivory in the Book of Psalms. "That's it, he decided, "I'll call my new white floating soap, Ivory."

The new "White Soap" was successfully christened "Ivory" and Harley Proctor now sought scientific backing for its claim of purity. Samples were sent to chemistry professors at Yale, Michigan and Princeton for analyses and the result became one of the most famous slogans in advertising history: "99 and 44/100% pure."

Borden Milk's "Elsie the Cow"

In the 1930's the dairy industry had its share of public relations and consumer problems. Well-publicized "milk wars" that were raging between farmers and dairy processors caused the big dairies in particular to be pictured frequently as evil money-makers off both the farmers and the public. Borden concluded the best approach was a friendly one, and one that would cause people to laugh or at least smile.

The most difficult of all proving-grounds was selected as a test for this kind of advertising: the then extremely dignified medical journals. In 1936 Borden's launched the medical advertising series that was to result in the creation of Elsie the Borden Cow. These were by no means "Elsie ads"; they were ads featuring a wide variety of cartoon cows with a variety of names, including Mrs. Blossom, Bessie, Clara...Elsie. A typical ad showed a cow and calf talking in a milking barn.

Calf: "Mama, I think I see a germ!"

Cow: "Mercy child — run quick for the Borden Inspector."

Another pictured a group of young heifers hanging on the words of a rather lazy and unimpressive-looking cow:

Heifers: "And now tell us about the time you got kicked out by Borden's."

Doctors loved the ads and swamped the company with requests for reprints to hang in office waiting rooms. While the medical campaign continued. Borden also began testing it in a few New York area newspapers. But it was in 1938 that Elsie came to real life coast to coast in both the U.S. and Canada. Borden was then sponsoring a network news commentator named Rush Hughes. A radio copywriter, intrigued by one of the medical journal ads, prepared a commercial that so delighted Hughes he read it himself. It made reference to the following letter:

Dear Mama:

I'm so excited I can hardly chew. We girls are sending our milk to Borden's now!

Love

Elsie

That commercial so amused Hughes' listeners that fan mail began coming in addressed not to him but to Elsie. Elsie became the spokescow for Borden ever after.

By 1939 Elsie had made her debut in national consumer magazines and had been quickly adopted by all the company's milk plants as a feature of local community promotional programs. She had even made an appearance on a bottom cap. And on the air she and Rush Hughes continued their regular correspondence. Borden was then preparing to open a very fancy, scientifically important exhibit at the New York World's Fair, and it seemed only natural to include a few cartoons of Elsie at the exhibit. However, she was not to be the focal point. That was a new "rotolactor," a kind of merry-go-round where cows were automatically milked on a 360° cycle. It was all very agricultural and very futuristic. Seven young hostesses had been trained to answer every scientific question and were instructed to keep logs of the questions most often asked. At the first month's end the tally was: (1) 20% about the rotolactor; (2) 20% about the location of the rest rooms, and (3) 60% about which of the 150 cows was Elsie.

Elsie's popularity was confirmed, and it was obvious Borden was going to disappoint a lot of friends if it couldn't produce a real Elsie, and fast. Of all the cows in the exhibit, the most beautiful was a seven-year-old blueblooded Jersey from Brookfield, Massachusetts, whose registered name was "You'll Do, Lobelia" — a name which would come back to haunt Borden some twenty years later. For the rest of the season, this particular Elsie, dressed in a beautifully-embroidered green blanket, was put all alone on the rotolactor twice each day for all to see, and millions did. This was a time when Borden advertising people learned something else: most cows are natural hams if given the opportunity, and Lobelia was among the hammiest. She didn't just smile at the crowds; she gave every impression of counting the house. The public took her to their hearts. That is how the live Elsie was born.

There is a misconception that Elsie went out of favor and was "brought back." Elsie never has been gone. She has appeared on many of Borden's product packages during the past few years and was featured along with the rest of her family during a 1976 Bicentennial advertising campaign.

Newsletter

FOOD PACKAGING AND LABELING

By

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OUTLOOK FOR 1981

President-elect Ronald Reagan's overwhelming victory has, in one full swoop, changed the face of both houses of Congress, decimated its ranks of all but a few industry critics, and radically altered the legislative attitude toward the regulation of business and the conduct of government. The Reagan landslide removed seven of the Senate's leading liberals, and altogether the Republicans gained control of the Senate by winning 12 Senate seats. In the House, the Republicans in an early count had gained at least 33 seats, sharply reducing a once comfortable Democratic majority.

For the "pro-regulation" philosophy that has prevailed in both houses of Congress since the election of President John F. Kennedy, the 1980 Republican victory turned out to be a debacle of awesome proportions. The "next" casualties are expected to be the heads of regulatory agencies, many of whom will find their budgets cut, their activities questioned by hostile Congressional committees, and the very existence of their agencies brought into serious question.

NEW CHINESE SHOW

"Packaging for Export" has long been a favorite topic of this writer and a long awaited show now promises to excite all others interested in the same subject.

March 12-19, 1981, are the dates for the Chinese International Exhibition on Packaging Equipment and Materials.

In order to satisfy the requirements of interna-

tional buyers and domestic consumers, China is determined to update and upgrade packaging capabilities. The exhibition aims to introduce advanced and popular packaging equipment and materials to Chinese industrial and commercial enterprises, with the intention of promoting Chinese trade and technology.

The show is to be held at the Kwangchow Foreign Trade Center in Canton. All manufacturers, or their agents, of packaging equipment and materials who are trading with, or intend to trade with, China are eligible to apply for exhibition space. Around 30,000 officials from the relevant Chinese ministries, foreign trade corporation, production firms, and other major end users from all over China have been invited to attend.

Here is a "birds-eye" view of what the packaging industry in China needs. Developed from conversations with Chinese packaging personnel and an intimate knowledge of export packaging, the list may serve as a guide toward new areas of business and how to successfully enter the Chinese market. 1. Blow molding, 2. thermoforming machines, 3. bag sealers, 4. plastic welders, 5. food dehydration systems, 6. vibration proof packaging, 7. candy packaging machinery, 8. wire capping, 9. strapping, and 10. bagging machinery.

Chinese packaging is far behind that of the more advanced nations. But in one area, they are perhaps significantly more advanced. The graphics on Chinese packaging are generally superb and very pleasing. Here, U.S. personnel can perhaps learn how to appeal and capture the eye of the consumer.

The subject of Chinese packaging has also recently cropped up in the news. In a recent action (Dec.

10, 1980), the FDA seized several brands of Chinese herb medicine. Marketed as an anti-arthritic remedy in brightly colored paperboard cartons, the labels did not note the products' contents which contained various prescription drugs. How this obvious problem was allowed to occur in the face of FDA jurisdiction is unknown. This is not the first time that the FDA has allowed violations to occur in Oriental food stores. Before approval was granted to the retort pouch, a wide variety of retort pouches were being marketed in Oriental food stores around the nation. Perhaps the FDA cannot read Chinese and doesn't care about compliance in Oriental markets.

NEW STUDY UNDERWAY

Several segments of the large U.S. \$17.3 billion metal and glass container market are vulnerable to replacement by less energy intensive and lighter weight paper and plastic materials in the period 1980—2000.

Omega Associates International is about to undertake a major in-depth study called, "The Coming Transition to Low Energy Packaging" which will relate the rapidly shifting energy economics for producing basic packaging materials with specific end-use market changes in the period 1980 to 2000. Although the study will focus primarily on U.S. markets and energy economics, an international section dealing with the major industrialized nations of the world, and third world countries taken as a whole, will be included.

FOOD SERVICE — 1980

"What McDonald's did — what was really a stroke of genius on Ray's part — was to create a fishbowl type of atmosphere. You could see the cleanliness. How many restaurants do you know of in the United States where you look into their food facilities and preparation area? Man, very few."

McDonald's President
Edward Schmitt (1979)

The term "food service" refers to all the activities related to the serving of food away from home. While terms such as "institutional feeding," "catering," or "food management" are sometimes used in its place, "food service is now preferred since it clearly includes all types of public feeding situations encountered.

Food service is the fourth largest industry in the United States in terms of sales and has the largest number of workers employed. In 1979, the 400 largest foodservice organizations in the United

States achieved sales of \$55.8 billion. McDonald hit the \$5 billion mark and eight other groups reported sales of \$ billion or more. When the other sectors of the food service industry are added to this total, overall sales for the entire industry is well over \$500 billion.

While the food processing industry has consistently taken advantage of technological advances to increase the productivity and reduce its costs, the food service industry, has continued to operate using the methods employed since the earliest days of its existence. Until fairly recently, each food service operation has continued to remain an on-site food factory and retail sales establishment. While other industries adopted the concepts of mass production, the food service industry did not begin to undergo its own industrial revolution until after World War II. Even today, in the United States, the vast majority of food service organizations continue to produce food from raw ingredients and sell the finished product on the same location. The modernization of food service organizations requires a two-dimensional separation of food preparation from its service to the ultimate consumers.

As efforts were made to develop new methods of food service which would take full advantage of the many technical advances in packaging, it soon became evident to many in the industry that on-site food production could be reduced or eliminated only through the use of partially or fully prepared foods: canned, dried, chilled, or frozen. It also became evident that food packaging and the equipment for handling and preparing "convenience foods" for service had to be planned on a "systems" basis. The development of the concept of "food service systems" is based on the realization that food, packaging, and equipment procurement are closely related if the success of a food service operation based on convenience foods is to be realized.

Packaging

The packaging used in food service systems varies almost as much as the types of machinery used. Many operations use aluminum foil containers; some use paperboard, and still others use plastic trays. Plastic films are used as well as all the different types of aluminum foil overwraps. The many different varieties of food service operations are only exceeded by the various types of packaging used.

Food Service Market

The food service market can be divided into four categories:

1. Commercial Feeding
 - a. fast food operations (most)
 - b. restaurants and cafeterias
 - c. caterers
 - d. refreshment bars
2. Semi-Commercial Feeding
 - a. schools and colleges
 - b. clubs, including service clubs
 - c. public transportation
3. Institutional and Charitable Feeding
 - a. hospitals and nursing homes
 - b. prisons and jails
 - c. convents and seminaries
 - d. disaster feeding
4. Government Feeding
 - a. military personnel
 - b. civilian personnel

Each of these broad categories has certain features in common, although obviously they also have many differences.

The Commercial Feeding Market. The one distinguishing feature that all commercial eating establishments have in common is that food service is the primary reason for their existence. They are in business to make money and to earn a profit.

Over three-quarters of all food service sales are in the commercial feeding market. Since the customer in a commercial eating place pays for the food he orders, his satisfaction is of primary importance to the commercial food service operator.

It is hardly necessary to stress the wide range of products and services offered by commercial eating places. At one extreme of this range is the hot dog stand in an amusement park. At the other end is the luxurious dining room (a 'white table cloth' operation) with candlelit tables and a French maitre d'hotel in formal attire. Somewhere in between these two extremes is the typical American fast food establishment, where the public spends some 80% of the money that goes to commercial food service operators.

Fast Food Operators. The International Foodservice Manufacturers Association, IFMA defines a fast food as a menu item that "...can be ordered, prepared, dished up, served, and consumed within 30 minutes." A fast food operation is "...any feeding establishment where fast foods are the most frequently ordered menu items."

A strict definition of fast foods implies that they are consumed on the premises, but most carry-out operations are included in the fast-food category. For example, Kentucky Fried Chicken considers itself a fast-food operation, even though some 80% of its orders during cold weather are consumed in the home.

Depending upon the chain (whether corporate or franchise), and upon its corporate purchasing policy, headquarters involvement in purchasing may vary all the way from merely setting quality standards to the operation of a central commissary. In the former, individual operators purchase everything they use. In the latter, they purchase nothing themselves, although they are charged for the items they order from the commissary.

Restaurants and Cafeterias. The next food service market segment in the Commercial category is called 'Restaurants and Cafeterias.' It includes a wide variety of eating places that may not be considered either of these. A small corner restaurant is far removed from a luxury hotel dining room, and both seem to have little in common with a downtown supper club. Like fast food operations, though, they are all in business to make a profit, so their primary concern is to please their customers.

Luxury dining rooms, whether operating independently or in connection with a fine hotel, usually specialize in two commodities: gourmet food, and high-quality service. As one IFMA publication expresses it: "Elaborate dining is the primary entertainment in a luxury restaurant...the real show is put on by professional service personnel who create an aura of ... extravagance."

Hotel/motel food service operations may include several different types of service. These may include table, counter or coffee shop, buffet or smorgasbord, catering, room, and vending machine service. Larger units may have bars or lounges, which may or may not offer food in addition to beverages. Obviously, the more of these services that are available, the more involved will be the food service operation, and the greater will be the opportunities for the alert food service sales person.

The Semi-Commercial Feeding Market. The next major market in the food service industry includes those operations in which food service is of secondary importance to some other activity. In fact, the food service function in such operations owes its existence to the other activity.

The profit motive may not be as strong as in commercial feeding, although customer satisfaction is still an influence, and must be considered. But in the semi-commercial feeding market, the greatest concern is (or should be) with the best buy for the dollar spent.

Schools and Colleges. One of the important segments of the semi-commercial feeding market involves the wide range of educational facilities, from elementary schools to universities. These obviously meet the criteria of semi-commercial operations, since feeding is a secondary function compared to

the primary activity of education.

Although they are grouped here into one segment, the various ranges of educational facilities must be divided into two sub-groups because of an important factor. That factor is the National School-Lunch Program, which exerts considerable influence on the buying practices of one sub-group, the one that is made up of elementary and high schools, both public and non-profit private. (The other sub-group consists of colleges and universities, plus those private schools that are, at least nominally, operated for a profit.)

The National School-Lunch Program provides federal financial assistance to those schools (or school districts) whose lunches meet certain minimum standards for nutrition and content. (The 'Type A' lunch that is approved under the Program must contain one-half pint of fluid whole milk, specified amounts of vegetables or fruit, and certain combinations of protein foods like meat, fish, or eggs.

Because of the National School-Lunch Program, which is in effect in about half of the nation's elementary and high schools, the United States Department of Agriculture (USDA) is by far the largest purchaser in the entire semi-commercial food service market. The USDA purchased well over \$1 billion worth of commodities and supplies in 1974, and served 4.1 billion meals to 23.5 million children. In addition, several large cities invested heavily in food service for school children, including New York City (\$128.8 million), Los Angeles (\$79.0 million), Chicago (\$65.5 million), and Miami (\$36.1 million).

The sub-group comprising elementary and high schools differs considerably, of course, from the sub-group containing the colleges and universities. In contrast to the 'captive' patrons of elementary school food service operations, college/university operations must cater to the tastes and desires of the young adults they are serving. Such giants as the University of Wisconsin (\$25.8 million annual food service sales) even have professional live entertainers in their snack food/beer service areas. Many college food service operations (and even some in secondary school systems) are run by professional catering services.

The Institutional and Charitable Feeding Market. In both the commercial and the semi-commercial feeding markets, as we have already mentioned, customer satisfaction plays a major role in determining the characteristics of food service operations. Now we turn to a market in which customer satisfaction is usually subordinated to

good nutrition or operational efficiency. This is the institutional and charitable (I&C) feeding market where those being served have little or no choice as to where or what they will eat.

When you consider the groups making up the I&C market, the reason for this change of emphasis becomes obvious. For example, in hospitals and nursing homes, good nutrition is vital. yet, with soaring hospital costs, operating efficiency is almost as important as nutrition.

In prisons and jails, while inmate satisfaction may not be essential, wholesome food certainly is particularly with the recent growing emphasis on the rehabilitation of criminals. And in housing those people who have dedicated their lives to charity and to religion, convents and seminaries must certainly consider bodily needs as well as spiritual.

One problem that is associated with a specific category of the I&C market concerns the teaching hospital. In these combined educational and medical facilities, only about one-fourth of the food service operation involves patients. Nearly three-fourths of the meals are consumed by the staff and visitors. This means that the food service operation must prepare and service not only the many special diets required by the patients, but also the more conventional foods desired by others. Indeed, the food service operation of a large teaching hospital may easily approach the volume and the complexity of a commercial operation.

Quite a different problem is faced in another I&C category — the nursing home. Here the problem stems partly from the fact that nursing home residents range from the completely bedridden to completely ambulatory, so that a wide range of feeding facilities must be provided. This range includes bedside service, individual table service in a central dining hall, vending service primarily for visitors and staff, and special function services such as social lunches and parties.

PARTIAL 1981 EXHIBITION SCHEDULE

1981 — January 12–19, Korpak — Korea; January 27–29, Weigtech — Wiesbaden, Specialist Exhibitions Ltd, Green Dragon House, 64-70 High Street, Croydon. Tel: 01-686 5741; March 10–13, Powtech — N.H.C Birmingham, Specialist Exhibitions Ltd. (as above); March 11–19, Graphispac '81 — Barcelona, Feria Oficial & Internacional de Muestras de Barcelone, Plaza de Espana, Barcelona 4, Spain.

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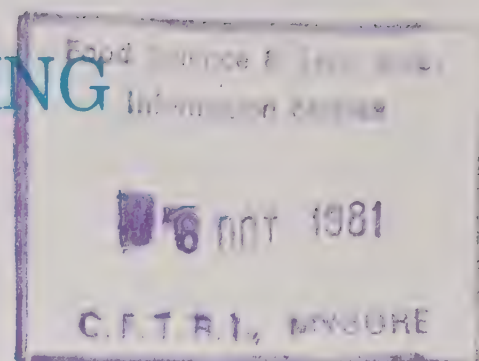
Newsletter

FOOD PACKAGING AND LABELING

By

Food & Nutrition Press, Inc.

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GROUND COFFEE UPDATE

Ground coffee usually needs a storage period after roasting to eliminate carbon dioxide before it can be packaged. "Aromafin" valves, from Robert Bosch Packaging Machinery, Piscataway, N.J., permit immediate packing and sealing, as they have a one-way action which releases carbon dioxide and individual oxygen over an extended period. The valves are 3/4 in. in diameter, and 1/32 in. deep, and are attached to the bagstock after forming.

To allow for different graphics and design features, the valves can be positioned in virtually any location, and their overall effect is to preserve freshness and prolong shelf-life. Mechanical gas flushing prior to sealing can also be used to reduce the oxygen level to approximately 0.5 percent.

UNIVERSAL PRODUCT CODE (UPC)
UPDATE — CANADA

Although UPC has caught up with the vast majority of products sold in Canadian supermarkets, more than 15 percent of similar merchandise in the United States has yet to bear the black-and-white bars. This is largely because the U.S. supermarket industry has been as reluctant to invest in electronic scanning equipment as packagers have been to add their packaging costs.

Yet, with one supermarket package in six or even unmarked, the situation is nevertheless a great improvement over what it was a short time ago. The past year has brought matters to a head. Supermarkets — the chains, especially — now see

the benefits of UPC as plainly as they see their labor costs soaring. The system eliminates the expensive and tedious chore of attaching price stickers to package after package. It also speeds up the lines at checkout counters, because cashiers don't have to waste time verifying prices when stickers are missing. And the electronic scanners are proving their worth in several ways. They are reducing cashdrawer thefts, losses that have been costing retail stores one percent of their sales. There are also savings through improved inventory control and bookkeeping.

By reading the UPC's sensitive ink markings, the scanners can identify the products unit price, ring up the sale and total the purchases item by item. They can be connected to central computers that automatically maintain records and issue re-orders when stock supplies begin to run out.

Introduced in 1976, UPC failed to gain noticeable acceptance among retailers until 1978 when stores were forced to cut costs wherever they could in the face of runaway inflation and a deep recession. During the first year of the scanner, U.S. manufacturers of such equipment sold only 104 units. Devastated by the poor reception, General Electric, RCA, Singer, Sperry Rand and Pitney-Bowes halted scanner production.

But with a worsening economy, 1980 saw an explosion in scanner sales. By June 2,207 U.S. supermarkets had installed no fewer than 16,000 units or an average of about eight per store worth \$385 million. The units bear the name of NCR, which claims 36 percent of the installations, IBM (33 percent), National Semiconductor (21 percent), and Sweda International and Data Terminals sharing

the remaining 10 percent.

The promise of UPC is high. By 1985, it is predicted every supermarket will have UPC equipment and the package that isn't marked with UPC just won't be allowed into any stores.

GLASS MICROWAVE STUDY RELEASED

Conventional glass containers can safely and conveniently be used in microwave ovens according to a recently completed study.

The research, conducted by Gerling Labs. of Cupertino, Ca., was funded by the Container Group of Indian Head Corp.

Glass is perhaps the only competitively priced material suitable for use as a packaging material which is both capable of being retorted and is microwave transparent.

Gerling Labs. determined that flint, green, amber and milk glass are transparent to microwave energy and that there is little danger of glass breakage in a microwave oven, even when container closures are left in place. Gerling studied flawed and unflawed containers supplied by Indian Head as well as locally purchased containers from other suppliers.

Although neither Indian Head nor Gerling recommends leaving closures secured on containers during microwaving, the Gerling investigation failed to break one container, through a series of increasingly severe evaluations on CT, lug and PT caps. In each case, the pressure build-up in the container as it heated caused the lid to come off the container long before there was any danger of the glass exploding.

Even when a 70 mm deep skirted CT closure was screwed onto a 16-ounce mayonnaise jar with external abrasions and glued into position with General Electric RTV sealant before being put into the oven, the container did not break. In this case, the lid blew off the jar when the pressure inside the container reached 58 pounds. The force of the blow caused the solenoid latch on the oven to give way, throwing the oven door open. The jar, however, was undamaged.

Based on these findings, the Indian Head Container Group is taking the lead in marketing and promoting glass to the food industry.

Glass considerably extends the convenience of a microwave oven by permitting products historically packed in cans, which must be heated in a separate utensil to be packed in glass. They can then be heated in the point-of-sale packaging and either served in that package or conventionally presented in a serving dish.

The main thrust of Indian Head's marketing program will be to communicate to packers and con-

sumers alike that glass jars are so uniquely suited to be a convenience package that they will clearly become a "microwave" of the future.

With seven plants throughout the country, Indian Head intends to stress the microwave findings in its national marketing efforts. Not only are food packers able to make up single-service products for jar microwaving, but family-sized jars of vegetables, sauces or ethnic specialty foods already on the market may be heated right in the jar, portions spooned out, and the leftovers resealed for later use.

Among other findings of the Gerling investigation:

(1) "Plasti-Shield" labels are microwave transparent and provide excellent thermal insulation to a glass container permitting the heated container to be safely picked up by the operator and removed from the oven.

(2) The shape of a glass container has little influence on the manner in which material heats in a microwave oven.

(3) The heating characteristics of microwave ovens are such that thermal shock of a degree necessary to fracture or break a glass container cannot occur.

According to Indian Head officials, there are currently more than 12 million microwave ovens in U.S. homes, and more than 35 million expected by 1985.

NEW VINTAGE WINE LABELING

The Bureau of Alcohol, Tobacco and Firearms is rethinking its regulations on vintage labeling of wine.

Earlier this year, the agency received a petition from a wine company asking it to allow multi-vintage wines and percentages on blended wine labels. The winemaker argued that the information is accurate, truthful, and the consumer has a right to such data.

Neither BATF nor the European Economic Community now allows more than one vintage date on wine. Moreover, U.S. winemakers are permitted to put vintage statements only on bottles in which 95 percent of the volume of wine is derived from grapes harvested in the labeled calendar year. Vintage wine must also be labeled with an appellation of origin other than a country.

The agency has asked for industry comments on multi-vintage labeling issues, in particular:

(1) Is there sufficient need to state the distinct vintages and percentages of each blended wine?

(2) Would the consumer be misled or confused

h two or more vintage dates and percentages on
els?

(3) Would such multi-vintage dates and per-
centages detract from what has traditionally been ap-
plied to the word "vintage" and vintage wines?

(4) Is there another term that can be substituted
for "multi-vintage," such as "multi-harvest" dates,
which does not detract from "vintage" or mislead
consumers?

(5) If allowed, what restrictions should be placed
on these labels? For example, must the components
of the blend be qualified to be labeled as vintage
wines themselves, since a vintage date would be
required for each component?

(6) The European Economic Community pro-
hibits the use of multi-vintage dates. If final regula-
tions (allowing it here) are issued, BATF will alert
American producers, bottlers, and exporters by use
of industry circulars and press releases that wines
with multi-vintage dates will be denied entry to
EC countries.

NEW PACKAGING DESIGN STUDY RELEASED

A new study, recently released by Overlook Howe
Consulting Group, points out that the use of
package design consultants is coming of age, at a
time when redesign is on the increase and new pro-
ducts on the downturn.

Because both internal and external conditions
create the need to address package design, the Howe
survey had marketers react to the most likely
reasons for change. A majority of the respondents
cited multiple conditions that currently impact on
their package design.

Just under half of the 85 respondents felt their
current package look is dated. Other reasons, which
best described their product marketing situations
were: Line Extensions — 34, Response to Competi-
tion — 29, New Formation — 23, Change in Package
Material — 14, Government Regulations — 12, New
Products/Markets — 6 and Metric Conversion — 6.

Because research can reliably measure consumer
acceptance of a new package design, the survey
collected its use by respondents. Surprisingly, 67 per-
cent of respondents *do not* conduct research; the re-
maining third do. Even more illuminating was cor-
relating the size of company to the incidence of con-
sumer research. As expected, and as a measure of
marketing sophistication, nearly 3 out of 4 large
(over \$50 million) corporate marketers tested their
packages to minimize introductory risk, while only 1
in 5 of their smaller counterparts affirmed use of
consumer research.

Another dimension of package evaluation was
also gauged: surveying a product's package design
against the competition's in the selling environ-
ment.

Just over half of the respondents have done
point-of-sale evaluation within the last two years,
and 11 percent over 5 years ago, reinforcing why the
dated package was a major concern by nearly half of
the respondents.

The survey also wanted to uncover who made
package design decisions, who does package design,
and, more difficult to measure, the perceptual
criteria and trade-offs that enter into the selection.

Eighty-three percent of the respondents have sole
decision-making authority for their product's
package design, with the remaining 17 percent em-
powered only as part of a committee or to make
recommendations.

Primarily, decisions about package design are
made at these levels: presidents, vice presidents,
marketing/sales, marketing directors/managers,
product managers, new product development
managers, merchandising managers, executive
directors, and materials managers.

Several respondents had creative and packaging-
oriented titles/ manager, graphics and design;
creative director; graphic specialist; director of
package design; director of creative marketing ser-
vices; director of advertising and promotion, and
package engineers.

Package design was unevenly dispersed among
in-house design staffs, package design consultants,
advertising agencies and free-lance artists.

1980 PACKAGES OF THE YEAR

There have been several interesting packages in-
troduced in 1980 and here are a few:

(1) *Thomas J. Lipton's "Instant Tea"* — The
reusable glass decanter needed a resealable closure,
but conventional primary and secondary closure
concepts were out of Lipton's price range due to the
number of elements involved. The solution — the
first large-scale commercial application of induction
heat-sealing for wide mouth glass jars — also ad-
vanced the state of sealing art.

Brockway Glass and Alcoa teamed up to make
the Hoyt Group's design concept a reality.
Brockway had broken ground by developing a pro-
cess for treating glass to accept induction heat seal-
ing — something that was not possible in the past.

(2) *Frozen Food* — Campbell's Swanson Division
has been anxious to put out a line of frozen TV din-
ners in microwave compatible compartmented
trays. Their sole requirement was that the tray had

to work equally well in conventional ovens and if possible save time and energy for consumers who don't have microwave ovens.

Swanson now has its tray and is marketing the first line of complete frozen TV dinners to be packaged in this way. Five meal varieties are in stores in the new three-compartmented tray.

(3) *Convenience* — Edwards Baking Co. has introduced a line of individually sliced pie slices. The slices are packaged in wedge-shaped polyethylene-coated cartons. Shipped frozen, they are available to consumers in outer cartons holding four slices and to food service operators in cases of 24 slices. They can be thawed in a microwave oven in minutes or on a counter in a few hours, and the package keeps them fresher longer when thawed.

Two opening options are offered: the first is a perforated tear strip on the end panel to permit the slice to slide out. The second is zip strips along the side which allow the lid to be lifted so the pie can be eaten right from the carton.

(4) *Package Application* — A unique marriage of paper and plastic has produced a package for Miami Margarine Co.'s "Nu-Maid" margarine that is more attractive, lighter and less expensive than the previous container.

The package is Container Corp. of America's "Versa Form" container, and it consists of a high-density polyethylene frame bonded to a paperboard shell. The lid is an HDPE rim with a paperboard disc bonded to it. Cost savings over the previous unit are estimated at 20 percent, and the paperboard shell provides opportunities for graphics not possible with the old container.

1981 METALLIZED PACKING COMPETITION WINNERS ANNOUNCED

The 1981 AIMCAL Metallized Packing Competition announced winning packages. Sponsored by the Association of Industrial Metallizers, Coaters and Laminators, the principal trade group for the film converting industry, the competition recognizes significant achievements in packages containing metallized plastic film or paper substrates.

Sun Maid Fruit Bits, produced by Sun Diamond Growers, along with *Laura Scudder Natural Potato Chips*, produced by the Laura Scudder Division of

Pet, Inc., shared honors as winners of the Food Packaging, Marketing category. Use of metallized polyester in the Fruit Bits package enabled the end user to penetrate a new market segment for the product by positioning it as a snack food yet capitalizing on Sun Maid's healthful image. In the Laura Scudder package, locked-in reversed printing provided by the use of metallized OPP yielded greater print durability. The package's construction improved graphics through high gloss appearance and extended the product's shelf-life.

Sun Maid Fruit Bits package construction: 25 mil PVdC cellophane/ink/10 lbs LDPE/48 ga metallized polyester/10 lbs LDPE/1½ mil LDPE film.

Laura Scudder Natural Potato Chips package construction: 48 ga polyester/ink/7 lbs LDPE/90 ga co-extruded metallized OPP.

M&M/Mars Corporation's Summit Confectionery Product Cookie Bar was recognized as the Food Packaging, Technical winner. The confectionery product required additional moisture, oxygen and odor protection due to cookie, peanut and butter flavor ingredients. Meeting this need, the package's metallized polyester structure improved barrier properties tenfold compared to previously used materials. The metallized substrate's use in the package was for functional purposes. For instance, metallizing provided opaqueness for graphics to eliminate the wetmark from the product's vegetable oils.

Summit Confectionery Product Cookie Bar package construction: special overlacquer/ink/48 ga metallized polyester/adhesive/70 ga PVdC coated OPP/registered cold seal.

The Elkins Roasted Ground Coffee Package, produced by Elkins Coffee, received the Pioneer Recognition Award. As the first package to use metallized polyester in the food industry on a continuous basis, it paved the way for the current widespread use of metallized substrates.

Elkins Roasted Ground Coffee package construction: lacquer/ink/48 ga metallized polyester/adhesive/2 mil LDPE.

Judging was based on package effectiveness and innovation in meeting marketing and technical objectives. Entries were evaluated for graphics, design, product protection and convenience.

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Newsletter

FOOD PACKAGING AND LABELING

By

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March 1981

BOTTLE BILL UPDATE

Bills to ban nonreturnable beverage bottles might be considered next year by as many as 30 State legislatures, about the same number as in each of the past five years. The most hotly contested efforts at banning the bottles are expected in Massachusetts and Rhode Island, two States where such bills have come close to being enacted in recent years. Most of the bills have not made it through the legislatures, but since 1972 Oregon, Vermont, Iowa and Connecticut have enacted measures to ban nonreturnable bottles. The Delaware Legislature approved a bill to regulate no-deposit, no-return bottles in 1978, but the law will not take effect unless the contiguous States of Pennsylvania and Maryland pass similar legislation.

Michigan and Maine passed bottle laws by referenda two years ago. In November 1979, Maine voters overwhelmingly defeated an industry-backed effort to repeal its law.

Despite the expected activity by legislatures, the bottle-making industry and environmentalists do not expect the issue to appear on ballots next November. Industry opponents, led by the Washington-based Glass Packaging Institute have lately been counterattacking effectively.

They spent \$450,000 to help defeat a complex bottle regulation bill in Montana last month, while proponents spent \$5,500. The bill would have required the beverage industry to establish a recycling program that would eventually have resulted in the return of 85 percent of beverage containers after 1983. The bill also contained a provision that would have allowed the State to impose

at least a 5-cent deposit on all bottles.

Bills regulating bottles have died in each of the 31 legislatures that considered them in 1979. Measures placed on the ballots in Ohio and Washington also were defeated. Environmentalists insist that 1979 was not a total loss because the repeal effort in Maine failed.

The glass industry has always outspent backers of bottle regulation. Lately, it has added another weapon to defeat bottle laws: it is supporting an anti-litter law that appeared in Washington State in 1972 and has spread to California, Alaska, Nebraska, Virginia and Ohio. These so-called litter-recycling laws impose a small tax on all industries whose products are associated with littering — paper product producers and aluminum manufacturers along with bottle and glass makers.

There are several reasons why the tide appears to have turned against the bottle bills, including inflation, the sensitivity of consumers who resisted paying deposits and because industry studies said that litter-recycling laws cut down on litter more effectively than did bans on nonreturnable bottles. Despite setbacks, environmentalists insisted that reports of the demise of the bottle bill movement were premature. They cited Michigan, where one year after a bottle regulation law took effect, surveys showed that more than 70 percent of the public favored continuing it, although beer prices rose partly as a result of the law.

PACKAGING EDUCATION VERSUS
INDUSTRY NEED

Industry will have access to less than half the

trained packaging professionals it will need over the next decade if current packaging education programs remain the same through 1990, according to the Packaging Education Foundation. These conclusions are based on the results of two studies undertaken jointly last year by the Rochester Institute of Technology and the Packaging Education Foundation, which indicate that more than 8,500 graduates trained in a variety of packaging disciplines over the next 10 years will be required.

The studies were conducted to provide a basis for long-range planning for the Foundation. Ten schools, current or former beneficiaries of PEF grants, responded to the Survey of Education. The Survey of Industry, distributed through *Packaging Technology* magazine, generated 50 responses. Industry respondents indicated that the availability of graduates already falls 40–60 percent below their needs.

ANSI STANDARD ESTABLISHED

The American National Standard Institute has published its new standard — ANSI MH10.1M—1980 — for unit-load and transport-package sizes. This is a revision of ANSI MH-10-1-1972 and MH10-2-1973, and combines two standards into a single document. The new standard covers five metric sizes for unit loads that efficiently fit the available internal lengths and widths of ISO Series 1 freight containers, USA truck trailers and railroad boxcars. It lists and illustrates 490 package sizes, and 802 patterns, that exactly match the unit-load dimensions; and it provides criteria for evaluating their relative merits according to the intended usage. It also includes a new illustrated “short list” of 83 preferred sizes. All dimensions are expressed in inches as well as millimeters.

Although use of an ANSI Standard is voluntary, it is hoped that use by the industry of the new ANSI MH10.1M—1980 Standard will be widely accepted and adopted to advance efficiency of shipments. Copies are available at \$9.00 per copy from Sales Dept., American National Standards Institute, Inc., 1430 Broadway, New York, New York 10018.

NEW AND REVISED CCTI DOCUMENTS

Publication of CCTI Standard Testing Procedure T-136, measuring Run-Out, Composite Tubes and Cores, has been announced by the Composite Can and Tube Institute. The new procedure provides methods for measuring two types of run-out when composite tubes and cores are rotated. In addition, CCTI has released eight revised CCTI Standard

Testing Procedures; six revised CCTI Recommended Industry Standards; and one revised CCTI Guideline.

A complete listing of the various documents and information on ordering is available from the Composite Can and Tube Institute, 1800 M Street, N.W., Washington, D.C. 20036.

BAG-IN-BOX WINE PACKAGES

The “Bag-in-Box” concept appears to be swiftly gaining a foothold in the wine industry. Despite some initial problems with filling, cartoning and shipment, new equipment on stream has made the vast majority of wine producers optimistic about the concept. The two machine systems being used by the wineries are the Scholle system which consists of Scholle bags, and a complex system integrating Packaging Industries Airless Flow system. The targeted shelf-life for the product is one year with a longer shelf-life acceptable. In an age where transportation is so expensive, this concept is particularly valuable.

RETORT POUCH UPDATE

Making the decision of which way to go even more difficult for canners is the retort pouch. For the decade or more that the pouch has waited in the wings, its proponents have billed it as a replacement package for premium-priced frozen foods. The economics didn't seem to be quite right for the proverbial can of peas. Now, that could very well change!

Rexham's Bartelt Machinery Division, the acknowledged leader in retort-pouching equipment, has devised an elaborate computerized program that directly compares pouching costs with canning. When everything is factored in (not just line costs but storage space, refrigeration, gas for truck deliveries, etc.), pouch costs are as competitive for canned peas as for frozen beef stroganoff in a carton. The computer is programmed with projected inflation rates. Can prices are rising at an 11-percent rate compared with 8-percent for foil-containing laminations used in the retort pouch. Food processors were first exposed to this report at the San Francisco show and though few came armed with all the necessary figures, this news was quite revealing to them.

PLASTICS PRODUCTION OFF

U.S. production of plastics resin in 1980 fell 11.8 percent from 1979, according to the Society of the Plastics Industry. Final figures are expected to

low resin production of 34.8 billion pounds compared with 39.5 billion pounds in 1979. Sales and use were off somewhat less, 9.9 percent.

Of the five major resins covered in the report, polypropylene production declined the least — 3.6 percent, while polystyrene showed the biggest statistical drop — 12.6 percent. Right now, industry observers estimate resin manufacturers are running at only about 65 percent of capacity. However, SPI looks for an upturn this year “in some areas,” sparked by ½-L soft drink bottles and, “assuming regulatory clearance,” adoption of plastic bottles for wines and liquors. All three of these uses, involve polyethylene terephthalate (PET), for which directly comparable 1980 and 1979 figures aren't available. Until this past year, SPI lumped thermoplastic polyester with “All Other Resins.” Its acceptance for soft drinks has now catapulted PET from the “also run” category.

SUPREME COURT DECISION AND PACKAGING

The decision of the U.S. Supreme Court in the Minnesota plastic milk bottle case has implications that may drastically affect the ability of the packaging industry to seek legal redress from undesirable actions of any State legislature. It is a severe blow to the basic argument that packagers should not be expected to meet different standards in different States if interstate commerce is to be effectively conducted.

In reversing a decision of the Minnesota Supreme Court, the U.S. high court held that the Minnesota Legislature was within its right in banning non-returnable plastic milk bottles. More broadly, it said that courts should not substitute their judgment for that of a State legislature. It turned aside the argument that the ban violated both the Equal Protection Clause and the Interstate Commerce Clause of the U.S. Constitution.

An immediate result is to strengthen the hand of the Minnesota Pollution Control Board. Under a State law passed several years ago, the MPCB had been seeking to rule on the admissibility of any package which it considered a threat to the environment or an excessive user of energy. In view of the Minnesota Supreme Court ruling on milk bottles, the MPCB had pulled in its horns and had not actually banned any package. The high-court reversal may change all that.

The long-range implication is that in all 50 States packaging interests can fight burdensome laws — such as deposit bills, punitive taxes and varying label requirements — only by appealing to the

legislature to change or repeal its action. That's the course to be taken by the SPI, which has announced that it will immediately seek a reversal of the milk bottle law within the Minnesota legislative process. Noting that the U.S. Supreme Court *did not* pass on the merits of the milk bottle ban, but only on the jurisdictional question, SPI will argue that the ban serves no useful energy or environmental purpose, is discriminatory against one form of packaging and will unnecessarily deprive the people of Minnesota of their choice of milk containers.

REAGAN ADMINISTRATION NEWS

The action of President Reagan in postponing pending federal legislation until the end of this month is important to packaging primarily as an indication that he is quite serious about his announced intention of minimizing such restraints on business. He said the freeze was necessary to give him time to study cost-benefit factors. In a memo to Cabinet members, the President said he is trying to establish “a new regulatory oversight process that will lead to a less burdensome and more rational federal legislation.”

One of the regulations held up is a new Labor Department standard for factory noise abatement. This has been of particular concern to the canning industry and others who must cope with noise on conveyor lines.

The freeze doesn't apply to independent regulatory agencies such as the Federal Trade Commission, but the FTC has been quiet lately, possibly because of the recent law that gives Congress a veto over its actions.

GENERIC “BRAND” UPDATE

The concept of “no frills” in supermarkets is moving beyond no-name packaging — which seems firmly established despite the belief of most observers that it would be a short-lived novelty — and is rapidly spawning a variety of warehouses and other limited-service, limited-stock markets.

The *Wall Street Journal* takes note of the trend, which it says is motivated by a Depression-type psychology of shoppers trying anything to lower their food bills.

The warehouse idea is typified by “Pick n' Save.” The growing chain displays products on cut-top shipping cases, requires customers to bag and carry their own groceries, won't take checks and very often eliminates such amenities as meat and produce departments. Shoppers must bring their own bags or pay for them. The number of warehouse

stores in the country is reported to have surged by 50 percent last year. If this sounds like the road to disaster, note the experience of one "Pick n' Save" store that claims its sales gained 40 percent in 1980. The attraction is brand-name groceries discounted by 10 to 20 percent. Stores are usually clean and well-lighted.

There is also the limited-assortment store, which usually offers fewer than 1,000 items, few perishables and a minimum number of sizes and brands. According to one supermarket-industry consultant, there were by the end of 1980 some 750 limited-assortment stores and 920 warehouse stores in the U.S.

It is also estimated that 15,000 supermarkets are now stocking as many as 300 "no-name brands" in a single store. A recent Roper survey showed that nearly 80 percent of adults had heard of generic products, and nearly half of these had tried them. In the Ralph's Grocery Chain in Southern California, some "no-name" products were reported outselling all the regular brands.

Marketing experts predict that the supermarket of the future, once all this has settled down, will be a hybrid retaining the services customers want most but incorporating some of the cost-cutting features now being demonstrated.

PVC AND LIQUOR

In early 1980 the Bureau of Alcohol, Tobacco and Firearms wrote to FDA asking for an updated opinion on the use of PVC for liquor bottles. Now BATF has given its answer and it isn't likely to make anyone other than glassmakers happy.

The letter from the FDA Bureau of Foods essentially dodges the question. It falls back on the position that there is no evidence of prior sanction for liquor bottles though conceding that PVC may be prior sanctioned for all other food-contact uses.

The letter does not indicate that FDA would move against PVC liquor bottles if they were on the market today. But it effectively negates any such move by distillers in warning that they would be "taking a risk due to the temporarily unsettled nature of food-additive law and science at this point."

The FDA proposed ban on PVC for all food uses, published in 1975 but never finalized, was based on the assumption that vinyl chloride monomer, considered a carcinogen, might migrate into the food.

What is "temporarily unsettled," FDA says, is the "threshold question" of whether there is, in fact,

some residual VCM "which can reasonably be expected" to migrate.

The plastics industry has long contended that it can now produce PVC from which there is no reasonable expectation of significant VCM migration.

FDA concedes that it is "presently reassessing its policies regarding indirect additives" largely because of the recent court decision on acrylonitrile bottles; that court decision suggested that migration might be so minute as to pose no problem.

It appears that if the industry waits long enough, both PVC and AN may ultimately be cleared by FDA for other food and drug applications. In view of the Reagan Administration's thinking, this is a very likely possibility!

TRADEMARKS FROM RELIGIOUS ORIGINS

Throughout the years the Bible has provided many other names for packaged food and drug products. Later called "Post Toasties," the original name for C.W. Post's corn flakes was "Elijah's Manna." But when Post used this as his product's name, he aroused the wrath of many influential ministers and the British government even went as far as to refuse to register his trademark. He quickly changed the name to the now-familiar, "Post Toasties." Religious objections to product trademarks exist even today. The "Underwood Devil" on the firm's sandwich spreads has been made into a "happy" devil because Underwood was concerned about possible religious problems and also to the possible establishment of the devil as a hero rather than the product and its taste quality.

In the history of patent medicine, products are found with names such as St. Anne and St. Joseph, not to mention Pastor Koenig, Father Francis' Herb Formula and Father John. Signs and symbols on packages abounded from the religious realm. Besides angels, Eve also appeared, picking fruit in a garden. The Good Samaritan had a career that spanned the centuries. Nostrums were marketed bearing such names as Balm of Gilead, Paradise Oil, Resurrection Pills and 666 (see Revelation 13:18).

Biblical names are even used in modern times. "Samonsite" luggage is an example of a trade name supposedly of Biblical origin. The trademark for Quaker Oats — "The Quaker Man" was once even defended against the Society of Friends who petitioned Congress, unsuccessfully, to bar trademarks with any religious connotations.

Newsletter

FOOD PACKAGING AND LABELING

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NEW LIQUID YEAST PACKAGE

A transparent film laminate package has recently been developed by Klockner Pentapack for the packaging of liquid brewer's yeast. Believed to be the first time this has been successfully achieved, the new packages should be of considerable benefit to the home brewer since the yeast gives beer a flavor unobtainable previously because of a lack of suitable package.

The two part laminate is made from a special grade of polyester and polyethylene composite to allow the necessary degree of oxygen permeation and is flexo printed in black.

NEW CAKE LABELER ON MARKET

With a daily output of nine miles of swiss roll pound for a variety of destinations, the British firm of Beehive required an efficient method of identifying both the type of swiss roll and customer for each pack as it is produced.

Previously this was done by hand using pre-printed labels slipped into the trays of rolls prior to shrinkwrapping, but a few months ago the firm became one of the first to install the newly designed Lawco-March (LM-S) labeling machine. This machine proved so suitable for the job that the capital cost of the equipment was recouped within the first month of operation.

It takes a mere eight minutes from the batter being mixed until the cakes, individually rapped in cellophane, are placed into trays which are shrinkwrapped and stacked on pallets.

The Lawco-March labelers produce a suitable label for each pack as it comes off the shrinkwrapper and by the time the operator has removed the label

and applied it to the tray another one has been printed ready for the next tray. The machines have also provided a great savings on preprinted labels. Previously, the company printed batches of labels on which a date code was included. To allow for all eventualities large quantities had to be printed for all six cake types and all those labels remaining were disposed of at the end of the day.

Four labelers are in use at the plant with one operator looking after two machines. Between them they handle three pallet loads an hour, which over the eight hour shift means 3840 cartons are being labeled each day.

Changes in the production are handled quickly as all the operator has to do is either amend the data on the imprint wheel which takes interchangeable "Riblok" rubber type.

IDENTIFYING PACKAGE STRENGTH ON SHELF

A newly developed test, "1981 Packaging Impact Test", promises to identify both the strengths and weaknesses of a package. Introduced by Opatow Associates, Inc. (919 Third Ave., N.Y., N.Y. 10022), a marketing-research consultant firm, the test is based on interviews conducted with consumers.

All respondents participate in the simulated in-store visibility test for packages in five or six compatible product categories. Each person is asked about imagery and package opinions for brands in only one of the product categories.

Each test is conducted in three geographically dispersed locations, selected to meet the needs of participating clients. Private, permanent interviewing facilities are used. These are located in large

shopping center complexes serving a broad range of middle-income customers. Test rooms at each facility are arranged in an identical manner.

Screening interviews are conducted on the shopping center mall. In order to qualify, an individual must have purchased a product in one of the categories included in the test, during a designated period preceding the interview.

Up to 1,200 qualified respondents are interviewed, 200 for each of the five or six product categories. The interview starts in a visibility test room arranged with one wall displaying a variety of packages on shelves. The product positions and relative facings approximate those found in a store.

All respondents are asked to walk past the shelves and look at the products as if they were shopping in a store. They may spend up to two full minutes on this "shopping visit," as timed by a stop-watch. After leaving the test room, they are questioned about what they saw.

The balance of the interview is conducted with 200 recent buyers, who are asked about brands in a single product category. These people are interviewed in an exhibit room which includes a table-top display of packages for three to five brands.

In order to determine how the package influences consumer perceptions, product and brand information are obtained before packaging questions are asked.

The respondent is handed each package in turn, on a rotated basis, and is asked about the brand. The order of questioning depends on whether the brand is new or established. Questions include likelihood of buying, as well as imagery impressions for selected attributes based on a rating scale.

Packaging diagnostic information and opinion ratings are then obtained, followed by product use and demographic questions.

Because imagery and packaging questions are asked for only one product type, measurements can be developed to meet specific packaging objectives such as those related to brand positioning, packaging materials or shapes, alternative illustrations or copy.

At times, finished-looking test packages cannot be produced. If participating clients agree, pictures may be used, with visibility measurements based on exposure to a slide film, controlled by use of a tachistoscope. Color imprints may be used for the balance of the interview.

Visibility and buying intent information are tabulated based on purchaser status. Visibility scores for non-purchasers are less likely to be based on familiarity. Brand-switching measurements are developed by analyzing buying intent based on recent purchase

If two or more alternative packages are tested monadically, results are tabulated based on those interviewed about each version.

The tabulations include confidence interval tables and, where relevant, statistical tests of significance.

Finally, the cost! Cost estimates are included in the letter of agreement and are based on the incidence of qualified respondents, the number of people to be interviewed, the length and complexity of the questioning, the type of analysis and the nature of the report.

The minimum charge is \$5,000 and the average is \$12,000, excluding the cost of product samples or pictures.

ASEPTIC PACKAGE UPDATE

The recent FDA decision, based on an intensive 3-year study of the use of hydrogen peroxide as a sterilant, stated that the previous ban on this approach to packaging liquids had been lifted. The leader in this area has been the Swedish-based Tetra-Pak Co. and most of the lines found in both Canada and Latin America use the Scandinavian system. Tetra-Pak's biggest competitor has been the West German Comibloc system and recent news appears to indicate that Comibloc is catching up to Tetra-Pak in both sales and uses.

Both systems were developed for packaging liquids, such as juices and dairy products, so they could be stored without refrigeration for several months. Fluids are flash-sterilized at high temperatures, then sealed in the airtight rectangular containers, which prevent any entry by air, natural humidity, or light. In Europe, the systems have carved themselves a major share of the milk and juice markets, refrigerators being both less common and smaller than in the U.S. and Canada.

Tetra-Pak's system was first offered commercially in 1969; the Comibloc developed by the giant Jagenberg Werke A.G. through its German subsidiary, PKL, followed in 1975. Cost per liter for aseptically packaged goods is roughly equal on both systems, but the Comibloc is faster and experiences less downtime.

Both systems accept pre-sterilized liquids, processed by machinery from other manufacturers, and seal the liquids hermetically in a sterile environment. In the case of the Tetra-Pak system, packaging material is formed and cut from a roll that is first sterilized in hydrogen peroxide, the equipment producing an airless package formed into a brick-like shape. The Comibloc, called the Blocpak in the U.S. and Canada, employs pre-formed blanks that are filled then ultrasonically sealed, leaving a small

pace at the top.

The rigidity of the respective packages, plus the presence or lack of one, is a controversial point in the firms' sales presentations.

For milk, a small quantity of sterile air is useful because it absorbs off-odors. Oxygen would have a deleterious effect on juice because of its action on ascorbic acid. The Combibloc, having firmly defined its market, stands up better after it's opened.

On the other hand, Tetra-Pak feels that rigidity is not needed when the package is in transit and is subject to most of the stresses it faces.

Marketing personnel feel that Canada will be the testing ground for the U.S. market. American consumers may be easier to sell on the basis of the energy-savings aspects of the systems. But Canada has traditionally offered some good case studies of marketing an unfamiliar concept. Western Canada has a number of firms using aseptic machinery, such as Sun-Rype Products, Ltd. of British Columbia, with its line of juices; and the diversity of the Quebec, Ontario and western markets offers a good range of examples of North American likes and dislikes.

More firms than just Blocpak and Tetra Brik (Tetra-Pak) are entering the field. Mead Packaging Corp. has recently announced plans to launch soon a Cross-Check aseptic system which was developed to use an alternative sterilizing method to hydrogen peroxide. West Germany's Bosch Corporation is also reported to be readying for a challenge.

NEW EUROPEAN RETURNABLE RULES

The battle of returnable containers in Europe is gaining momentum. Despite reports of the scrapping of legislation of non-returnables, the subject continues to elicit interest among EEC members.

A new draft recently submitted for the approval of member States eliminated the ban on ring pulls. The eighth draft still has a long way to go before it becomes law; the latest proposals cannot go before the European Council without approval from other directorates.

A number of points are likely to be raised over the draft, not least the definition of a "container." At present it is conceivable that industrial movements may come under the "returnables" directorate. Also certain products such as vinegar or salad oil cannot be put in used containers.

The timing of the proposed directorate is not considered imminent. If the latest draft is accepted by the relevant directives, it must be passed by the Council, and then sent to a working party for polishing.

Each member State would discuss the proposal in its parliament, and finally the legal directive would have final touches added before presentation to the council.

It finally looks like Europe-wide legislation will be drafted quite soon.

COPYRIGHT AND TRADEMARKS

Knowing the difference between a trademark and a copyright is often quite important for the packaging manager. It can determine how to protect package features and elements against unauthorized use by present or would-be competitors.

Copyright is legal protection that the federal government gives the creator of original wording, sounds or pictures presented as expressions.

A trademark is legal protection the federal government gives the creator of words or visual designs that denote the source of a product or distinguishes one product from another. It is a method of identifying a product as satisfactory and thereby to stimulate further purchases by the consuming public.

One can obtain a trademark on a book, on a brochure, on the exciting words on a label, on a song or play, on a sparkling cake photograph on a package of cake mix.

One can obtain a trademark on a trade name, on a slogan, a symbol designating your product or your name, or logo.

The protection obtained in both cases is against others copying your creations, either directly reproducing it or substantially adopting it in a new creation.

Materials that are copyrighted should carry in a prominent place a copyright notice: the word "copyright," an abbreviation of the word copyright, namely "C" in a circle, along with the name of the owner of the copyright and the year of copyright.

Trademarked elements carry the designation "R" in a circle. If a trademark has been applied for, or it is believed that it is a common-law trademark, the letters "TM" should be affixed in proximity to the element.

A facet of trademark law has become controversial. That is the practice of large marketers obtaining a trademark but not continuing to use it after the initial use necessary to obtain the trademark. Proctor and Gamble is reported to have a stockpile of 60 trademarked names for various products and consumer goods. This practice has been used as a ploy to lock up attractive product names.

A picture on a label or package can be copyrighted if it involves a high degree of originality

and artistic expression, even if the subject is as commonplace as a cake. Kitchens of Sara Lee was able to protect photographs of chocolate cake, cheesecake and pound cake against an infringer. The court said, "The pictures of the cakes used by plaintiff on its labels, although not achieving the quality of a Leonardo still life, nevertheless have sufficient color artistry to entitle them to protection against obvious copying."

A label design can also qualify for trademark protection. A leading decision holds that a polka-dot pattern on cans of household cleanser constitute a "device" which can be trademarked. Mere ornamental labeling has consistently been denied trademark protection, but when it takes on an image in the mind of the purchaser, helping to identify and distinguish the source and the product, protection is available. In another case, the court held that the proportions and arrangement of red, white and blue stripes on a shaving-cream aerosol can produced a distinctiveness protectible by trademark.

The standard way of analyzing what a trademark does breaks down into three different functions.

First is the *identification* function. A trademark is the device by which a consumer distinguishes among similar goods or services offered by more than one manufacturer. It bridges the gap between the consumer and the manufacturer, a gap that tends to grow wider as production units increase in size, distribution extends to more distant markets, and self-service retailing takes the consumer even further away from the source of supply.

The second function of a trademark is the *guarantee* function. The consumer learns to recognize a particular trademark as a symbol of quality. It guarantees the public that the goods purchased today will be the same as the goods bearing the same trademark that were purchased yesterday.

A trademark does not necessarily guarantee good quality. What it does guarantee is consistency. If the consumer does not like the product bearing a particular trademark, the fact that it continues to display the same trademark makes it possible for the consumer to reject it — just as, in the converse situation, it enables the satisfied consumer to select once again the product that pleased him.

Third is the *advertising* function. A trademark obviously is a symbolic device that can be used in advertising. More specifically, the package that bears the trademark becomes an advertising medium itself — an advertising medium that is particularly important in present-day merchandising when so many products are bought off the shelf in supermarkets and other self-service outlets.

□

Morton Salt's "The Umbrella Girl"

The story behind the famous Morton Salt trademark begins around 1910 when the Morton Salt Co. was organized from the merger of several smaller firms. Most dealers were then purchasing 300-pound barrels of salt and dispensing smaller amounts to their retail customers. Efforts to get these dealers to buy 3- or 5-pounds of salt had met with minimal marketing success. The Morton Co.'s "Seal Salt," a high grade table salt packed in a paper lined bag also had failed to meet with consumer approval. In order to again attempt to capture the imagination of the consumer, Joy Morton turned his attention to a new, free-running salt which he packed in a spouted, round package. This time, he insisted, the package would feature the company name rather than a dreamed-up brand name like the disappointing "Seal Salt." In 1912, "Morton's Table Salt" was launched in the blue and white asphalt-laminated paper cannister with an aluminum pouring spout.

The Morton Salt Co. soon decided to advertise on a national scale and retained a well-known advertising agency to handle their advertisement on a regular basis. It was in 1911 at this agency that the little "Umbrella Girl" became a living part of American commercial history.

The selection of the Mortons Salt Co.'s trademark was made by Sterling Morton II, then President of the Company. In his own words, "One of the agency men suggested we might look at the three substitutes to see if we liked any of them better than the twelve which the agency considered best. I was immediately struck with one of the three. It showed a little girl standing in the rain with an umbrella over her head; under one arm she had a package of salt tilted backward with the spout open, and the salt running out.

"Under the drawing of the little girl was the legend, 'Even in rainy weather it flows freely.' This struck me as being pretty good but rather on the long side. I remember distinctly saying that what we needed was something short and snappy like Ivory Soap — It Floats. We worked around with 'Flows freely, runs freely,' but none seemed quite right. Finally, the word 'pours' was suggested. That filled the bill, so 'It Pours' as well as the words 'Free Running' were approved for the new label.

"Then history was made. Someone (and I wish I knew who!) said, 'There is an old proverb, It never rains but it pours...'" I think everyone in the room realized that we had something there. After a little discussion, I suggested that 'never' and 'but' struck me as poor words to use, that negative connotations should be avoided in a slogan, so we then turned the old proverb around and made it positive instead of negative — When It Rains It Pours.

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TRADEMARKS

Introduction

Last month, this Newsletter devoted several columns to the subject of trademarks and their influence on packaging. This month, the Newsletter will discuss the subject in even greater detail in an effort to inform and educate the reader.

"Without trademarks by which to identify articles of merchandise, there would be no way to tell the good from the bad." Edward Rogers in *The Lanham Act and the Social Function of Trademarks* (1949).

Many people working in the graphic arts and advertising fields use the terms brand, brand name, trademark and copyright interchangeably. In many cases, this may be correct. But in other situations legal restrictions and definitions have created distinct boundaries between each of these terms.

In the American Marketing Association publication, *Marketing Definitions: A Glossary of Marketing Terms*, brand is defined as "a name, term, symbol, or design, or a combination of them which is intended to identify the goods or services of one seller or groups of sellers and to differentiate them from those of competitors. It is an all-inclusive term that in one way or another includes other, more particularized terms.

A brand name consists of words, letters and/or numbers which may be vocalized. On the other hand, a trade name relates to a business and is synonymous with the company name. A brand mark is the part of the brand which appears in the form of a symbol, color or design. A consumer recognizes the brand mark by sight and it is not expressed when she pronounces the brand. David Ogilvy calls

the brand mark "a first class ticket through life" and issues one to each of his clients, deliberately designed to raise their social status. Mr. Clean, Del Monte, and Arrow are brand names. California Packing Corporation, Johnson and Johnson and The Quaker Oats Company are tradenames. The bear of Hamm's Beer, Elsie, the Borden cow, and Mr. Peanut of Planter Peanuts are brand names.

A trademark is defined by the American Marketing Association as a brand which has been given legal protection because under the law it has been appropriated exclusively by one seller. The modern trademark fits the definition in the Lanham Act which has been in effect since July 5, 1947. "Any word, name, or symbol, or device or any combination thereof adopted and used by a manufacturer or merchant to identify his goods and distinguish them from those manufactured or sold by others." Other marks can also be registered under the Trademark Act (see Table 1). All trademarks are brands and thus may include the words, letters, or numbers which may be pronounced. They may also include a pictorial design (brand mark). It is wrong to consider the trademark as only the pictorial part of the brand. A particularly interesting work illustrates many early 20th Century U.S. trademarks: Joseph Sinel, *A Book of American Trademarks and Devices* (Alfred A. Knopf), New York (1924).

Copyright is legal protection the federal government gives the creator of original wording, sounds or pictures presented as expressions. Materials that are copyrighted should carry in a prominent place a copyright notice: the word "copyright," an abbreviation of the letter "C" in a circle, along with the name of the owner of the copyright and the year of copyright. Illustrations,

Table 1. Other Marks Capable of Registration

Type of Mark	Definition	Example
Service Mark	A mark used in sales or advertising to identify the services of one person and distinguish them from the services of another	Titles, character names, distinctive feature of radio or TV programs, e.g., <i>One Man's Family</i>
Certification Mark	A mark used by one or more persons other than the owner of the mark to certify the regional origin, material, mode of manufacture, quality etc. of goods or services, or to certify that the work on these goods or services was performed by members of a union or organization	<i>ILGWU</i> Union mark on clothes; <i>Good Housekeeping Seal of Approval</i>
Collective Mark	A mark used by members of a cooperative, association, or other collective group, including unions	<i>Shaker</i> herbs, <i>Darigold</i> used as a farm group to identify their dairy products

devices and written matter appearing on packages come within the scope of copyright but as in most cases, so much depends upon the degree of originality.

Brands

A brand makes it easy for a consumer to identify a product or a service. It assures consumers that they are receiving comparable quality when they are reordering items. For the seller, a brand can be advertised and has a distinct recognition factor when displayed in a store. It tends to reduce price comparisons on two items with different brands. It also adds a measure of prestige to otherwise ordinary products such as Domino sugar, Chiquita bananas, and Morton salt.

The Name Game

"We have used computers to search through 128,000 words in order to produce one that is both appropriate and unclaimed." Walter P. Margulies (1980).

Selecting a good brand name is often a difficult and unrewarding job. "Many names of widely advertised articles are grotesque, meaningless, hard to remember, uncouth, and in every way ill-

fitted to serve the purpose." From *Modern Advertising*.

In a study made several years ago, it was found that only 12 percent of the names helped sell the product, 36 percent actually hurt sales, and 52 percent were 'nonentities — contributing absolutely nothing to the sales appeal of the product' (see Table 2).

Table 2. Devising Trademarks

Type	Example of Brand
Word	Kodak, Exxon, Yuban, Uneeda
Description Mark	Halo, Head and Shoulders, Born Blonde
Descriptive Mark	Double Bubble Gum, Sea and Ski, Sunlite, Turtle Wax

Think of the power of the symbolic value of a strong name, and all that it implies — Rolls-Royce, Hilton, Chanel, Lux. These are all symbols, and all are attitude-inducing and behavior-inducing, because they are intimately related to the values and norms of the society we live in.

Frequently the idea for a name and/or mark is suggested by one person and executed by several, or vice-versa. Many famous designers have spent major parts of their careers attempting to relieve the dull aesthetic level of most American trademarks. In past decades, designers such as W.A. Dwiggin, Harvey Hopkins Dunn, T.M. Cleland, C. B. Falls, Edward Penfield and Rene Clarke have all contributed their energies to this area. Particularly good trademarks, from the design view, are among others, the Morton Salt Co.'s "Girl with the Umbrella," the H.J. Heinz logo and the Sherwin-Williams "Globe" (designed by George W. Ford).

In order to properly develop saleable brand names, certain well-defined rules should be followed.

(1) The name should suggest something about the product's characteristics. It should describe the product without using ordinary English words. Easy-Off (Boyle-Midway), Deep-Cleanser (Avon Products, Inc.), Beautyrest (Simmons), Glade (S.C. Johnson & Co.) and Range-Toppers (Corning Glass Works) are examples of names that are both descriptive and functional. On the other hand who would know that Heavenly Hash is an ice cream, Good News is a disposable razor, and Hi-Fi is a line of cosmetics?

(2) The name should be short, unique, easy to pronounce, spell and remember. Excellent examples include the short one-syllable names such as Joy, Cheer, Fab, Tide, Gleem, Mum, Crest, Shout, Vel, Off, and Pledge. The preference by the public for such names is why Budweiser became Bud, Lucky

strike became Luckies and Michelob became Mic! The names will also tend to be better remembered if they have a suggestive connotation. Old Granddaddy and Wild Turkey are excellent examples.

(3) All names selected should be distinctive and identify the specific product. Brands such as Gold Medal, Blue Ribbon, Imperial or Mark I, II, III are not particularly suitable for the specific product or service. After A-1 beer was renamed Lancers A-1 beer, sales climbed rapidly for the Arizona Brewing Co. A name such as Whiskey Lickins not only fits the product but probably wouldn't work for another kind of product.

(4) The name should be sufficiently versatile to be applicable to new products added to the product line. The famous Maxwell House name has been adapted to Max Pak premeasured coffee and Maxim freeze-dried coffee. Eastman Kodak conjugates its diverse product lines by reworking its name and initials, such as Ektachrome, Kodachrome and Kodacolor. Frigidaire is an excellent name for a refrigerator and other cold-image products. When General Motors expanded its line of home appliances and added Frigidaire kitchen ranges the name lost some of its sales appeal.

(5) The name should have no unpleasant connotations. A good name should not be antagonistic. Yve St. Laurent's brand name Opium might create a mood for its perfume, but it could be quite offensive to a sizable percentage of potential customers who consider opium dangerous and illegal. The brand Opium also triggered a protest from the Chinese community who regard real opium as an alien poison forced on them by foreigners. Yankee Clipper brand alarm clocks did not sell well throughout the South but did sell there when its trademark was changed to Dixie Bell. Soul brand beer, produced in 1967 by the Maier Brewing Corporation in Los Angeles, was considered to be an objectionable name by the National Association for the Advancement of Colored People. Their protest was so strong that the brands were withdrawn after two years on the market.

(6) The name should be capable of being used internationally. The trademark selected might have a totally different meaning in some other language. Mikado pencils were widely sold in the U.S.; however, after Pearl Harbor the Eagle Pencil Company changed its trademark to Micardo. It is not easy to pick a name that can be pronounced internationally, but concerns like Nescafe, Coca-Cola and Essq have done the trick and profited from it.

(7) The name selected should lend itself to pictorialization. The ability of a brand to be remembered as a picture is particularly valuable. There are a large number of very well-known trade-

marks in active use: Shell's scallop shell, the Flying Red Horse of Socony, the Four Roses label, Robertson's golliwog and more. Even the shirt has become a veritable zoo (see Table 3).

Table 3. Shirts with Animal Trademarks

Brand	Animal Used as Trademark
Izod Lacoste	Alligator*
Ralph Lauren	Polo horse
Giorgio Armani	Eagle
Sweden	Tiger
J. C. Penney	Fox
Campus	Tiger
Jordache	Horsehead
Munsingwear Grand Slam	Penguin

*First used about 1931 when French tennis pro Rene Lacoste was nicknamed "the croc" for his speed.

(8) The name must be capable of being registered and legally protected under the Lanham Act and other statutory or common laws. This is a rather obvious requirement. A Michigan brewer put out a beer under the name of Korr's. The Colorado-based Adolph Coors Co. took a dim view of this move, claiming, and winning the case that the Korr's name and label infringed on the Coors beer name and label. But even though Philip Morris was first with its Marlboro Lite brand of cigarettes, a federal court ruled that R. J. Reynolds Tobacco Co. could continue to market its new brand, Winston Light.

If not legally protected, some brand names may become generic and can be used by any firm. This occurs because of widespread use, lapsing legal protection, patent expiration and/or excellent advertising on the firms' part (see Table 4).

Table 4. Brand Names That Are Now Generic

Linoleum
Aspirin
Celluloid
Cellophane
Kerosene
Nylon
Shredded Wheat
Thermos

There are several new trends in the naming of products. One is the increased use of "X" and "Z" in deriving product names. First there was only Xerox. Then some time later came Exxon. The basic appeal of a name such as Exxon is that it says nothing and it means nothing. This is also true of Kodak. Now

there's Xoil, Xplor, Sci-TeX, Printronix, Kevex and Xicor and Xylogics.

X is the mark beside the dotted line, the symbol of love, death and hidden treasures. Inserted between two numbers, it causes them to multiply, yet it stands as well for unknown quantities. Now X has found a new function in the names of unknown corporate quantities that have set out in quest of success in energy and high technology.

"We like to see names that suggest a way-out futuristic product," says J. Morton Davis, President of the D.H. Blair Company, the Wall Street Brokerage firm. Mr. Davis is a founder of Xplor, a new oil exploration company. "Take a name like Xicor (pronounced Zycore) for instance," Mr. Davis said. "While it doesn't mean anything, it has a certain ring, a pizzazz and a fizzle to it."

Because of the paucity of meaningful names, executives have begun to invent words they hope will convey an alluring image and pique the curiosity of investors.

For much the same reason, the Z has begun to spread as in Zeus Energy and Zoe Products. And in a few cases companies are going further afield. Gene M. Amdahl, the I.B.M. emigre who founded the Amdahl Corporation, has founded a new company that he named Acsys Ltd. after abandoning several other possibilities. "We finally thought we had one that was way out there," recalled Mr. Amdahl, "but we were beaten to the punch by a new start-up that had just applied for a license." Still, the final name, which stands for Amdahl Computer Systems, has been well-received by investors both here and in Europe, Mr. Amdahl said.

Not all newborn companies accept the theory that mystery arouses investors. They put the hard-sell right up front, as in Bellwether Exploration, Lyric Energy, and Big Bonanza.

To further illustrate that no rule of marketing is beyond exception, just consider the astounding success of the J.M. Smucker Company. They capitalized on their rather unique name by advertising — "With a name like Smucker's it has to be good."

A name has psychological implications and is not used only for identification. New product failure because of the brand name is inexcusable marketing, and indicates poor research. In today's economy both factors should not be tolerated in good business.

Testing New Names

During the last decade a new industry has arisen devoted to the pre-testing of proposed trademarks. These tests often take the course of public surveys

to determine consumer reaction to the new trademark. Ernest Dichter, a leader in the field of motivational research, relates how a brand name is tested (In *Packaging: The Sixth Sense*, Cahners Publishing Co. (1973). In pre-screening a Germany laundry detergent, called Persil, his organization found that to most Spaniards who participated in the study, the name suggested a strong masculine product. This permitted the development of an advertising campaign in which the masculine sounding laundry detergent married the "feminine" linen waiting to be washed.

Opatow Associates, Inc. (New York City), have developed a "1981 Packaging Impact Test." The test involves a consumer survey of packaging effectiveness to check many aspects of the package. One factor tested is product and brand imagery.

Other tests used are conducted by simply interviewing the particular segment of the buying public whose judgment is needed. This may be done on a door-to-door basis or randomly.

Because of the trend toward increasing consumerism, it is certain that the use of surveys in the merchandising of products will increase. It is also highly conceivable that they will be even more widely used to pre-test proposed marks as the search intensifies for "the mark" that will outsell the competition.

Registration of Trademarks

Use in commerce is required for the registration of all trademarks. The mark must be displayed on a product, its package, or an accompanying label, or it must be displayed in the sale or advertising of a service. A trademark need not be registered in order for it to be used in commerce. It must, however, be registered if the user of the mark wishes to be regarded as its legal owner with exclusive rights of use. The mark must also clearly indicate that it is registered in order for the user to have full legal protection.

There are two registers in which a trademark may be registered, the Primary Register and the Supplemental Register. If a trademark is ineligible for the Primary Register, but has been in lawful use in commerce for the year preceding the filing of the application for registration, it may be registered on the Supplemental Register. Registration on the Supplemental Register does not give the right to prevent importation of goods bearing an infringing mark, but it does provide some protection to the owner by giving the right to sue in the United States Court.

By

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RETORT POUCH UPDATE

The high-speed retort pouch machine on which ITT Continental Baking Kitchens Div. took delivery last summer has now been returned to its maker, Rexham's Bartelt Machinery Div. The 250/min. machine was classified as a prototype from the first. ITT's test runs have provided actual production exposure to a number of new techniques for which Rexham is now filing patent applications.

Rexham will proceed to redefine the design concepts of its continuous motion single-lane unit. A production model is still two or more years away. Meanwhile, ITT will revert to production on its 60/min. Bartelt. This is adequate for the near future as it continues to market test Continental Kitchens and Deli in Florida and Atlanta.

Kraft also is reporting astounding success with its a la carte line of retort pouches. Only 10 to 12 months after introduction, Kraft's retort pouch is outselling comparable frozen single serving entrees by wide margins. Production capabilities will determine future direction but it certainly appears that Kraft is thinking big.

Delaney Clause Modification

The move to modify the intolerant provisions of the Delaney Clause as they affect food packaging materials has taken a new and promising direction.

A group of lawyers representing several packaging and product interests has been working for several months on far reaching legislation, labeled the "Food Safety Amendments of 1981". It is ready for submission to Congress. The bill which is expected to find sponsors in both House and Senate

comprises a series of amendments to the Food Drug & Cosmetic Act. Of prime importance to packaging is the potential effect on the Delaney Clause. It would take packaging materials out of the definition of the term "food additive", thereby eliminating the need for filing food additive petitions. The Delaney Clause could no longer be used to ban an indirect additive, such as a migrating monomer, if the risks are judged "insignificant". This is in line with present thinking at FDA and, in fact, with the recent federal court opinion in the acrylonitrile case.

Secretary Block (U.S. Dept. of Agriculture), who is chairman of a subcommittee group on food and agriculture, voiced his dissatisfaction with the Delaney Clause in a recent address to a Washington Food Safety Conference.

Under industry's proposed bill, FDA would be required to make several findings before banning a food additive. No longer would a showing of cancer in test animals be sufficient cause per se for a ban; FDA would have to consider the amount fed to animals in relation to amounts humans would be exposed to, the differences in human and animal metabolism and other factors.

The proposed bill may well be the vehicle for long needed reform. But fast action is not in prospect. Any bill of this nature will face extended hearings, objections and charges. The best guess is that a legislative result is at least one year away.

Indicative of the new FDA attitude was a statement by Dr. Arthur Hull Hayes, Jr., the new FDA Commissioner, in his first appearance before a Congressional committee. He told a Senate Appropriations subcommittee: "It is questionable whether the Delaney Clause was meant to apply to very small quantities of substances which themselves are part

of a material not directly added to food."

UPC NEWS

Giant Food was the first chain in the U.S. to eliminate price marks in all of its stores. All 127 Giant stores have electronic scanning and computerized checkouts. Now Giant is waging a two-front battle which may finally determine the value of UPC code marking.

About 12 consumer groups are actively opposed to this idea and want to retain full price marking. Their tactics include passing out leaflets at Giant stores in the Washington-Baltimore area, urging all consumers to fight Giant.

Giant Foods was taken by surprise by the action. They had lowered their prices on 1,500 to 2,000 items because of the saving in labor costs due to the elimination of price marking. This still did not satisfy the consumerists, who proclaimed that Giant was deceiving the public by making shoppers believe that all prices were being lowered.

On the other hand, both Safeway and A&P have accused Giant of unfair competition due to the price cutting and have vowed to retaliate against the smaller chain.

Giant believes it has provided adequate shopper information by enlarging price signs on shelves and providing grease pencils for any shoppers who want to mark prices on items for themselves. Giant is frank to say that it needs a sizable increase in sales volume to justify the price cutting; if that doesn't materialize, price marks will go back on — and prices undoubtedly will go back up.

Of course, the entire argument may become academic if a recent surge in price-mark legislation takes hold. Thirteen States now have price-mark bills on their calendars. Even more ominous is a Consumer Food Labeling Act just introduced in the House in Washington which would amend the FDLA to require visible price-marking nationwide.

Advocates of the rapidly spreading electronic checkouts say that mandatory price-marking will not stop the trend; it will only reduce the benefit.

TRADEMARKS

The importance of a modern useful trademark cannot be overemphasized. Readers of this *Newsletter* have been exposed to discussion on trademarks, but probably know little about their history. In order to gain a full appreciation about trademarks, a brief review of their history will follow in

an effort to stimulate new and profitable marketing ideas!

The use of trademarks predate written history. When man traded face to face, there was no need for a trademark. Once the trader's success spread outside his immediate area, he needed to distinguish his product from others.

The urge by humans to differentiate and identify is basic. In Genesis, when Cain was expelled from the Garden of Eden after killing Abel, the Lord set a "mark" upon Cain. This derived from the already familiar practice of cattle branding practiced by the Egyptians and the inhabitants of early Bronze Age Europe.

The earliest identified markings on bricks and tiles date back to ancient Egypt. These bricks were often marked with the manufacturer's name, monarch's name and usually identified by a picture of the particular project for which they were intended. Nebuchadnezzar had his name stamped on every brick of his palace.

Chinese pottery bore a mark on its base noting the date manufactured, emperor's reign, maker's name and often, its place of manufacture. Quarry marks and stonecutters signs are found in Phoenician projects and in the ruins of ancient Troy, Olympia and Damascus.

In ancient Greece and in the Roman Empire trademarks were extensively used on many different types of products. They were used on amphorae, terra-cotta tiles, bricks, oil lamps, medicine containers and cheese jars. From the ruins in Pompeii and Herculaneum, archaeologists have unearthed evidence of both signboards on shops as well as markings on goods. Henry Sampson, in his pioneering work, "History of Advertising" published in London (1875) says that "as luxury increased, and the number of houses or shops dealing in the same article multiplied, something more was wanted. Particular trades continued to be confined to particular streets; the desideratum then was to give to each shop a name or token by which it could be mentioned in conversation — thus a hare and a bottle stood for Harebottle, and two cocks for Cox. Others whose names could represent, adopted pictorial objects; and as the quantity of these augmented, new subjects were continually required. The animal kingdom was ransacked, from the mighty elephant to the humble bee, from the eagle to the sparrow; the vegetable kingdom, from the palm tree and cedar to the marigold and daisy; everything on the earth and in the firmament above it was put under contribution." Here then are the first traces of the use of trademark symbols and the now common use of both animals and other objects to denote brands.



From the fall of the Roman Empire to about the fourteenth century, western mankind lived through a time known as the Dark Ages, which was characterized by a decline of learning. During this period, the use of marks virtually disappeared. Artisans and tradesmen were unable to read or write even the simplest types of inscriptions.

The first mark to emerge out of the abysmal ignorance of the Dark Ages was the personal mark which identified individuals. There were also house marks which identified family living there. Packages and goods were also marked, especially when they were to be shipped for considerable distances. There is a recorded case of a shipwreck in which balls of wax were recovered. The merchants who had shipped them were able to recover their salvaged property by the proprietary marks that appeared on their goods.

Other marks appearing in the Middle Ages included watermarks on paper, marks on cloth, printers marks, marks on pottery and apothecary jars and even on bells. An excellent three-part series of articles on early English apothecaries drug jars appears in *Art and Antiques*, March 13, 20 and 27, (1981). Written by Dr. John F. Wilkenson, it describes the various marks present in these early jars.

In the Middle Ages, large quantities of guild marks also were used to enforce control of industry, especially territorial trade barriers. Every trade was regulated by its guild, which controlled prices and standards of work. The Guild's officers regularly and carefully inspected the work of members, because dishonest workmen could give the trade a bad name. Marks were often used to denote guild approval and certification. Typical marks were used by guilds on wine, knives, swords, drapes, pottery and precious metals.

Siher marks (hallmarks) were one of the most commonly used marks in the Middle Ages especially in England. The history of silver hallmarking began in 1238, when as a result of fraudulent practices by a manufacturing goldsmith, Henry III attempted to control standards for silver and gold products. He decreed that six goldsmiths of the City of London be selected to supervise the craft, and laid down standards of fineness for both metals.

In 1300, Edward I reiterated his father's ordinance, commanding firstly, that silver be no worse than the "sterling" standard, and additionally that it be marked with the King's mark of the leopard's head. Other marks soon followed. In 1363, an ordinance of Edward III empowered every goldsmith to have his own maker's mark. Much of modern trademark law and many commonlaw rules con-

cerning trademarks are similar to the initial guild legislation.

It was the guild marks which evolved into the trademarks in the modern sense when goods began to be shipped for long distances. Preferences for particular workmanship developed and the trademark on the product allowed the consumer to identify the product with its maker.

Modern Trademarks Emerge

It was the industrial revolution that catalyzed the widespread use of trademarks in the modern sense. With increased advertising came growth in distribution. A method was soon needed to identify the source of the goods and trademarks appeared to "fit the bill".

Trademarks were occasionally used in the United States before the Revolutionary War. But their use dramatically increased after the Civil War. Aided by the widespread use of outdoor advertising during the war, the first federal trademark law was passed in 1870 but only 10 years later, was declared unconstitutional because it was thought to restrict commerce between the states.

Although a new law was passed in 1881, the original 1870 law was responsible for the first trademark registered in the United States. The honor went to the Averill Paint Company of New York who registered an eagle on October 25, 1870. Six years later, in 1876, the William Underwood Co. Boston Mass became the first firm to register a trademark for food — Underwood's Deviled Ham in the can with the "Little Red Devil". In the same year, the Bass Brewing Co., Ltd. registered the first trademark in England (the famous red triangle). It is said that a representative of Bass spent the night on the steps of the registrar's office to be sure of getting first place in the Trademarks Register. Bass registered three of their bottle labels and then the triangle and diamond on the labels which were always red.

Brand names were rapidly transforming the face of American business. From 121 registered trademarks in 1871 and 1,000 in 1875, more than 10,000 were registered in 1906. And the use of trademarks kept growing (more than 700,000 are registered today).

During the later part of the 19th century, the patent medicine field contributed widely to the growth of trademarks in the United States. Even before the registration began in 1870, the fiercely competitive patent medicine industry made judicial history in this area.

Patent Medicine Trademarks

Unwilling to patent their medicines, these pre-1906 patent medicine manufacturers coined a wide variety of trade names for their products. Patent issuance meant that the product formulation became known to the public and this was the last thing the producer of medicine had on his mind. Their products were “secrets” or nostrums, literally “ours”. If most of these useless formulations were known they would be immediately recognized as being dangerous or at least useless. A trade name, indicating the brand, not the product and registered with the U.S. patent office was capable of a stout defense under the trademark laws without any product disclosure. These patent medicines technically enjoyed government protection; the contents of the medicine remained secret.

The impact of repetition was further strengthened if the product name was memorable (see Table 1). Some medicine hucksters turned to alliteration with product names such as Burdock’s Blood Bitters, Radway’s Ready Relief, Swift’s Sure Specific, and Fechter’s Famous Faricon. Others used names that reflected the cure offered — Dr. Adam’s Wart Cure, Dent’s Toothache Gum, Dr. Sweet’s Infallible Liniment, and Warner’s Safe Cure. These names were often printed with a distinctive type inducing a feeling of familiarity. Pictorial symbols serve the same function, such as Radway’s ministering angel and Lydia Pinkham’s maternal countenance (registered in 1876). While the formula of the medicine might change over time, the trademark endured protected first by common law and after 1870, by federal statute. Until the Pure Food and Drug Act of 1906 established initial control over proprietary remedy promotion, the nostrum producers were free to mix whatever they wanted. It all ended in 1906 but trademarks had already become “part and parcel” of American life.

Smith Brothers Cough Drops

The introduction of Smith Brothers Cough Drops is yet another landmark in the trademark history of the late 19th century. Originally called James Smith & Sons Compound of Wild Cherry Cough Candy, in 1866 the company passed on to James’ sons, William and Andrew. The brothers changed the name of their product to Smith Brothers Cough

Table 1. Pre-1906 Patent Medicine Tradenames

Variety Group	Examples
Doctor	Dr. Ayer’s Hair Vigor, Dr. Parmenter’s Magnetic Oil, Dr. Flint’s Quaker Bitters, Dr. C. Y. Girard’s Ginge Brandy, Dr. Grosvenor’s Belanodyne Porous Plaster, Dr. A. L. Taylor’s Oil of Life, LDr. Hooker’s Cough and Croup Syrup, Dr. Jordan’s Balsam of Rakasir
Indian	Indian Compound of Honey, Boneset and Squills, Ka Fon-Ka, Dr. Morse’s Indian Root Pills, Dr. Kilmer’s Indian Cough Cure, Kickapoo, Modoc Oil, Seminole Cough Balsam, Nez Perce Catarrah Snuff, Wright’s Indian Vegetable Pills
Chinese	Dr. Lin’s Celestral Balm of China, Dr. Drake’s Canton Chinese Hair Cream, Carey’s Chinese Catarrh Cure, Ching’s Patent Worm Lozenges
Religion	St. Anne, St. Joseph, Pastor Koenig, Father John, Balm of Gilead, Paradise Cil, Resurrection Pills, 666, St. Jacob’s Oil
Women	7 Sutherland Sisters Hair Grower, Lydia E. Pinkham’s Vegetable Compound, Madame Dean’s French Female Pills

Drops and were enjoying a huge success, when competitors introduced products with similar names such as Schmitt Brothers, Smythe Sisters, or Smith and Bros. In order to protect their product, the brothers devised a distinctive trademark. Both brothers put their own pictures on the large glass bowls placed on store windows from which the drops were sold, and then put into envelopes for the customer. By pure chance, the word “Trade” appeared under the picture of William and the word “Mark” under Andrew.

The glass bowl container and the envelopes had definite limitations and in 1872 these two ingenious brothers developed one of the first uniform “factory filled” packages. They put their cough drops into printed paperboard boxes each decorated with their now-famous trademark.

Until the 1890’s, most American trademarks reflected patriotism and a sense of Victorian allegorical beauty. When immigration became an accepted part of American life, the trademark became identified with the product’s attributes. Less people could read and a sense of familiarity was needed to convey the product to the consumer. People, figures, animals, comic types and slogans were introduced to the now rapidly consuming public.

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Newsletter

FOOD PACKAGING AND LABELING

By

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LATEST RETORT NEWS

As the retort pouch continues to do well in limited retail test markets positioned against frozen meats, it's being strongly touted by American Can as a replacement for the #10 can in foodservice. Three members of American's retort pouch program participated in a recent technical seminar sponsored by Pouch Technology, Inc. All were strongly positive about the potential of the large (12 × 15 or 18 in.) pouch for overall cost savings, improved taste, ease of disposability and safety for foodservice employees. The market for #10 cans is estimated at 700 million annually.

Their statements can be summarized as follows. Food processors must expect to spend up to \$500,000 for the filler/sealer, retort and other accessories needed just to achieve what is essentially pilot-scale output of six to 18 pouches/min. But this investment can be recouped relatively quickly from savings in materials (pouchstock versus cans) and freight. Even reduced costs for ingredients. Most retort-pouched products require less salt and sugar than their canned equivalents. Packagers are urged not to wait for faster equipment. Eventually, all pouchfed machines will be converted over to rollstock but this will take about 2-4 years.

The foodservice pouch is susceptible to shipping damage. Shock can cause rupture due to hydraulic force within the pouch on impact. Vibration from transit-caused movement of pouch or contents can result in flex-cracking of the pouch walls. To counteract these hazards, American Can has designed a triangular-walled corrugated tray to isolate individual pouches and restrict their movement. The trays stack four to six high, depending on pouch size. They can then be shrink-film bundled or cased.

BRIK-PAK DEBUT IN U.S.

Novel to the U.S., but commonly used in Europe, the aseptic Brik-Pack has finally arrived in the U.S. (see our *Newsletter*, May '81). With the technology coming from Brik Pak, Inc., the Dallas, Texas affiliate of Tetra Pak of Sweden, aseptically packaged milk is already on the market in West Coast supermarkets — produced by Real Fresh, Inc., Visalia, California. Real Fresh initially only packaged milk aseptically for military markets. Other aseptically packaged products on the market include Ocean Spray Cranapple juice and Grapefruit juice.

CASE CODING UPDATE

Before the ink is even dry on test runs, the Uniform Container Symbol (UCS) for shipping cases is already caught in a battle of words. It seems that the Uniform Product Code Council, which oversees the UPC on primary packages, wants to rename UCS the Universal Product Code on shipping cases. UPCC recently took steps to translate the UPC into a direct counterpart for shipping cases. It has agreed in principle to the use of interleaved 2-of-5 symbology, or USD #1, and a specification manual is to be prepared for its member companies. UPCC will also publish an encoding guideline. This will involve specifics of symbol length and location. Both will be offered for comment.

Tom Wilson of McKensey & Co., a consulting firm, notes that the recommended "UPC case code" will probably be a 14-digit symbol.

Most of the spadework has been done by the Distribution Symbology Group and its recommended guidelines for the UCS. UPCC should finalize its

work within the next two months. Users can expect to begin applying for case codes shortly thereafter. This should take care of grocery-products packages, but no group has yet stepped forward to coordinate the case-coding efforts of other industries.

NEW TEST FOR VACUUM-PACKED BEEF

Vacuum-packaging of beef for retail sale has just received a new lease on life. Two new test programs, one by Chatham Supermarkets, Detroit, Mich. and the other by MBPXL, the Wichita-based beef packer, share the same package size. The concepts, however, differ markedly.

MBPXL (formerly Missouri Beef Packers) is offering vacuum-packed mini-subprimals of beef in printed Barrier Bags from Cryovac. The cuts are larger than the normal consumer-size beef purchases, but the printed labels include consumer cutting instructions and some cooking suggestions. They are offered with the MBPXL, or Excel brand labels. Thus, the concept is to offer stores case-ready branded subprimals that require only price-marking for sale.

At Chatham, the chain has become the latest test for what American Can Co. now calls its Fresh-Seal program, an updated version of the Clearcut program it was promoting two years ago. In Chatham's central meat facility, a beef cutting and trimming line feeds retail cuts directly into a Bivac vacuum-packaging machine. Finished packages are then distributed to six of Chatham's stores, along with other meat products handled by the warehouse.

Both programs have similarities. The style of packaging is the same, although the equipment is not. Both packages offer unlimited visibility of the meat inside, excepting the label space on the MBPXL packages. Because the oxygen is evacuated in both processes, they share the common feature of meat with a dark ruby red color. Meat conventionally packaged in supermarkets is normally a bright red because of ambient air in the package.

These common denominators have made both MBPXL and American Can realize that considerable trade and consumer education is needed. American has continued to refine its trade and especially its consumer approaches ever since it launched its first test, that with Erdman Supermarkets, Rochester, Minn., in 1978. Erdman is still using the vacuum-packaging system for all of its beef.

MBPXL, on the other hand, started out with little educational effort, a void it is now moving to fill. The firm is now in the final stages of a research

program that will provide future guidance.

American has been enthusiastic in revealing its program at Erdman's when that began. It is now taking a very different tack regarding the Chatham test. So much so, in fact, that it has a nondisclosure agreement with the supermarket chain.

For Chatham and for Erdman's, the system represents what may be the key to making central meat cutting feasible and economic for a larger number of supermarket operators. That is because the package reportedly provides shelf life up to 10 days, in some cases even two weeks.

FLEXO AND GRAVURE

There have been some outstanding success stories on the quality of flexographic printing. Five years ago, if a manufacturer wanted to buy color halftone printed flexible packaging film, and he wanted a realistic photographic image with which to protect and decorate his product, he was obliged to buy gravure printed film.

Many attempts were made in previous years to product halftone printed film by the flexographic process, but most were completely unsuccessful, or at best resulted in printed film of poor commercial quality.

There were many reasons why good halftone production printed by flexo was nearly impossible. Probably the biggest problem was the plate itself — the rubber stereo. It is almost impossible to reproduce rubber stereos with controllable tonal gradation, as required for halftone printing, or with a thickness tolerance tight enough to ensure minimum impression and squash on press.

When photopolymer (such as DuPont's Cyrel) was introduced, it was recognized by a small number of printers as the tool they were waiting for and with which they could produce tone printing. A flexographic printing plate able to reproduce exactly what was on a film negative.

Now, color halftone printing by flexo is widespread and has developed to a level of sophistication whereby it is a major competitor with gravure for superb flexible packaging. But these facts are often confusing to a food processor. How does flexo compete with gravure and what benefits does flexo offer that gravure does not offer?

Flexo printed color halftone work now compares very favorably in quality with gravure print flexible stock. The general standard of flexo printed halftone work on packaging films is now equal to, and in some cases decidedly better than, the general standard of gravure printed color halftone work on flexible packaging films.

If one were to compare a bread wrap printed flexo and one printed gravure, the flexo printed sample is invariably of better quality.

After parameters have been established for flexo press performance, color separations can be produced on scanners to match individual press requirements. When film work has been completed, photopolymer plates can be produced with exact one for one image from the negative. Every plate can be made exactly the same.

It is not possible with acid etch to reproduce every gravure cylinder the same. Cell depth and cell shape etch, by acid, is not an exact art, and gravure cylinders frequently need hand correction before they are ready to run for the first time. Constant adjustments to ink density and color are a fact of life in a gravure press. It is almost impossible to produce biscuits or snack food illustrations from our process color on film, by the gravure printing process. Therefore, a multiplicity of special gravure colors must be kept in stock for different runs. Thirty biscuit lines produced, each requiring three shades of brown, i.e. buff, mid-brown and dark brown, could mean that the converter producing these lines would need to store up to 90 different shades of brown ink. Compensation and compromise are necessary parts of gravure film printing.

Because with photopolymer it is possible to produce a printing plate with constant tonal values — if the same negative is used each time — a degree of variation is removed. Because reproducibility is possible in photopolymer plate making, flexo work with process colors is possible. It should be noted that there are many other variables, however, many of them are related to operator expertise and apply equally to gravure printing. If then it is practical to print 3 and 4 color process from flexo, it should be possible for the printer to significantly reduce his ink stocks, thereby reducing his costs because he does not have capital tied up in inks and needs less area for ink storage.

Operating costs of flexo versus gravure vary considerably from plant to plant. A modern gravure press costs about 50 percent more than a similar quality flexo press.

A gravure press will usually require more operators than a similar sized flexo press and will require more than twice as much factory space than a similar width flexo press. A gravure press will also consume more power and heat energy than a flexo press because there are many more electric motors on a gravure press, many more heating tunnels, and much larger interlock driers than on a flexo press.

Cyrel plates properly treated, printing color halftone work, will produce many millions of impressions per plate. Gravure cylinders under very good conditions may produce a million impressions; then they will probably need some sort of rejuvenation, maybe a re-roll and re-chrome or possibly a complete re-make (at the food processor's expense). Clearly, flexo printing is one of today's best buys.

NEWS BRIEFS

(1) Supermarkets are moving more and more toward capitalizing on the public's increased use of vitamins, especially in the West, where adult vitamin use is estimated to be as high as 48 percent (compared to 35 percent nationally). Supermarkets currently account for only about 10 percent of vitamin volume compared to 33 percent for drugstores and 29 percent for health food stores. Also, vitamin section profitability is double that of the health and beauty aids section in profit per unit sold and profit per exposure foot. Sales reportedly reached \$1.7 billion in 1980, double 1975 sales, and are projected to grow by 15 percent annually. Especially aggressive in the new push for supermarket business are Rexall Drug, A.H. Robins, and Hudson.

(2) To avoid pilferers peeling conventional tapes from sealed cartons and resealing them with a fresh tape of similar appearance, many tape users are now making increasing use of security tapes, often using a simple printed code novel to the user, so that a would-be thief has little or no chance of possessing a similar tape. A tape printed with company logo or product message can also eliminate the cost of printing on cartons.

In addition to its primary function as a carton sealant, such a tape, which can be printed in one or more colors, can carry an advertisement, a security message, a price change, or wrap a group of items with a premium offer message.

Long rolls are applied by semi or fully automatic taping machines for:

(1) Bundling of 2 more more articles for special promotion.

(2) Product identification, while sealing the cartons or boxes at the same time.

(3) Security sealing of cartons with valuable contents.

(4) New low cost taped handles on wire or fruit juice casks.

The short rolls are mainly used for low cost labelling, advertising of company, business or brand names, etc. and are dispersed by hand.

FROZEN FOODS, PET FOODS AS GROWTH MARKETS FOR PACKAGERS

According to Predicasts, Inc. per capita consumption of frozen foods will reach 93 pounds in 1995, up from 62 in 1980 and 46 a decade ago. Citing increases both in working women and single-person households, Predicasts expects frozen foods to be a \$1.9 billion container market in 1995, up from \$440 million in 1980. Predicasts' new analysis of the U.S. market, also targets pet foods as a rapidly growing end use. A doubling in pet food volume by 1995 will create a \$2.2 billion container market, up from \$480 million in 1980.

Total value of food container shipments will reach almost \$26 billion by 1995, up 9 percent annually from 1980's \$7 billion. Price increases will be responsible for most of the growth, with real gains for materials ranging from plastic's high of 3 percent annually to aluminum foil's market decline of nearly 6 percent per year.

Paper Will Rebound

Paper will reverse its market decline, reaching over 2 billion tons, valued at \$6.5 billion, by 1995. Predicasts cites the substitution of ovenable paper-board trays for aluminum foil containers and new markets for composite cans as key factors in the turnaround. Aluminum foil, still suffering from its incompatibility with microwave ovens, will fall from 110 million pounds to 44 million by 1995, when shipments will be valued at \$228 million.

Metals other than foil will remain the largest factor in food containers, but their market share will drop to about 46 percent by 1995, when shipments will reach \$11.9 billion. Both metal and glass container markets will remain stable due to their strong position in preserved foods, which will show an increase in per capita consumption despite competition from frozen foods. Glass will register a slight

U.S. FOOD CONTAINER SHIPMENTS

ITEM	1980	1995	% Annual Growth
Food Consumption (bil lb)	285	352	1.4
Food Industry Shpt (bill \$)	183.9	691.2	9.2
<i>By End Use (mil \$)</i>			
Produce	32	113	8.8
Meat, Poultry & Seafood	668	2308	8.6
Dairy Products	554	1724	7.9
Preserved Foods	3268	11240	8.6
Frozen Foods	439	1914	10.3
Grain Milling Products	303	990	8.2
Baked Goods	247	863	8.7
Confections	233	640	7.0
Fats & Oils	185	650	8.7
Other Human Foods	775	3019	9.5
Pet Foods	481	2280	10.9
TOTAL	7185	25741	8.9
<i>By Material (mil \$)</i>			
Paper	1670	6545	9.5
Plastic	500	2214	10.4
Metal ex Foil	3515	11874	8.5
Foil	160	228	2.4
Glass	1340	4880	9.0
TOTAL	7185	25741	8.9

Source: Predicasts Research Group; Predicasts, Inc.; Cleveland, Ohio

gain in market share, reaching \$4.9 billion in 1995.

Although plastic containers are the only type expected to increase vis-a-vis food expenditures over the forecast period, growth will be limited by low barrier properties and manufacturing cost increases. Shipments will reach \$2.2 billion in 1995, when plastic will represent less than 9 percent of the total food container market.

For further information contact Predicasts, Inc., 11001 Cedar Avenue, Cleveland, Ohio 44106.

Newsletter

FOOD PACKAGING AND LABELING

8 FEB

By

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CROWAVE UPDATE

Growing interest continues in selling food products which can be heated in microwave ovens without removing the products from the containers in which they are purchased. To do so with glass containers requires adequate assurance that glass will withstand the stress conditions generated, particularly shock and cavitation. The results of an in-depth laboratory study by Thatcher Manufacturing Co. found commercial wide-mouth soda-lime containers feasible for microwave heating. The Thatcher study recommends removing closures and covering the jar opening with plastic wrap or waxed paper, and to stir the contents at least midway through heating.

PACKAGE DESIGN GROWS

In an article in *The Wall Street Journal* (August 1981), the subject of package design is treated as an asset to sales in 1981. Package design, which has often been called a "second-class citizen" of the design world is now coming into its own. Pressed by tough economic times and increased competition, more packaging personnel are examining their products' packages to see if they are doing a good sales job.

The results are visible in any supermarket. Color and eye-catching graphics are used more frequently in packaging. Copy is being restyled to unsnarl the jumble of words, known to designers as "mouse print," that has been added to satisfy government regulations. More direct proof — often a striking

photograph of the product itself, or what a product is or does is being moved to the front labels from the back and side.

When sales of Ralston Purina's Chex cereal declined several years ago, the food processor decided that the product had a strong brand name and good consumer awareness but a stodgy image. Besides reformulating the cereal and creating new advertising, Ralston changed the package to replace a picture of cereal in a bowl with a close-up of Chex on a spoon.

Encouraged by Chex sales, Ralston has made package-face lifting a standard tool for rejuvenating sluggish brands. In January, Ralston made extensive changes in both their Dog Chow and Whisker Lickins packages.

The effect of such changes is often hard to measure, because attempts to stimulate stagnant brands often include product improvements and more funds for advertising and promotion. It's very seldom that a new package design by itself is going to make a brand succeed or fail.

Packaging's role is increasing for several reasons.

(1) *Acquisitions*. One of the most noticeable changes at Seven-Up in the three years since Philip Morris acquired it was the introduction last year of a new design for the soft drinks bottles and cans.

(2) *Price*. When the price of fancy seafoods rose rapidly, buyers of Wakefield frozen seafood saw a new price tag. Lippincott and Margulies gave Wakefield a more elegant box, which features a photo of seafood in a silver serving dish.

(3) *Product-line Expansion*. As the numbers of related products sold under a single brand name grow, marketers want to give them a common look.

Planter's nuts and Weight Watcher's foods are undergoing package changes for that reason.

Most often, marketers change packages for simpler reasons: crowded supermarkets and harried shoppers. A typical large store stocks 15,000 items and, as consumers become more price-conscious but spend less time planning shipping trips, more buying decisions are made spontaneously.

Consumers do not read as much but they are very intelligent. They relate to pictures and one out of every six shoppers who needs eyeglasses doesn't wear them while shopping.

Perhaps the biggest change in packaging during the past 20 years has been the increased professionalism of the packaging specialist. Once mostly skilled artists, package designers now have experience in market research as well. Designs are tested carefully in front of consumers to determine what sells well, not just what is aesthetically appealing.

GENERIC PACKAGING

Opinion Research Corp. reports that cost is becoming the deciding factor in determining product selection. ORC's study of consumers shopping behavior suggests the perceived quality differences of nationally advertised brands may no longer keep buyers from reaching for house brands or generics. ORC also said that 48 percent of the 1,010 consumers surveyed are buying more generics than two or three years ago, with the shift most prevalent among young, affluent, better-educated consumers. Also noted by an A.C. Nielsen Co. study was that approximately 6,000 food stores were carrying generics as of the end of 1980, representing approximately 29 percent of food store sales volume in the U.S.

TWO-PIECE FOOD CANS

The prospect for self-manufacture of two-piece, draw-and-redraw food cans looms larger as American Can considers licensing its two-piece can technology. The company says that technical advances make the process more attractive from economic and operational standpoints to packagers assessing self-manufacture options. Potentially improved economics stem from an added partial ironing step that reduces can sidewall gauge. American Can itself will manufacture commercial quantities of the draw-redraw-iron food cans for the next packing season. While guarding data on sidewall dimensions, American Can says the ironing process can

reduce the gauge to a level approaching the minimum needed to achieve physical strength. The process still uses pre-coated stock; the coating serves as a lube during the partial ironing and retains its integrity.

NEW FILM ON U.S. MARKET

Not since Surlyn appeared in the late 1960's has a new film captured the imagination of packagers as has linear low-density polyethylene (LLD).

LLD is used as an additive or blending agent with low density polyethylene. It adds its own distinctive properties to film which stems from this blend of resin. The advantages of blending LLD with low density polyethylene is that the material resulting offers increased hot strength, hot tack and an ability to seal through product contamination. Also offered is an ability to withstand drops. These properties come about because of polymer modification.

The meat industry can profit from LLD properties. Generally, a meat package needs hot strength, hot tack and an ability to seal through surface contamination. Meat packaging also needs greater durability than it formerly required, because of today's conditions and overall distances of distribution. Typical examples might include luncheon meat, frankfurters, and sausages. LLD film upgrades the durability so vital to distribution and it enhances the puncture resistance of the film made from it.

One of the more significant advantages in using LLD is its applicability on a packaging line. A well-maintained packaging line, or battery of machinery can take a narrow spectrum of material tolerances, with the machinery compensating for variations such as gauge or heat-sealing range. On the other hand, if a plant does not maintain its equipment well and the machinery does not have that much performance latitude, the only way to obtain satisfactory product is via the material. LLD builds a certain degree of forgiveness into the film, allowing it to run on the machine.

Although LLD is not an ionomer, it provides much of the performance one obtains from an ionomer, and at a price equal to polyethylene. If a food processor cannot justify the upcharge of an ionomer, LLD offers much of the same properties at a lower price.

For all practical purposes, printing on LLD is really no different than on other material. However, it is worth noting that when LLD is combined with a resin such as low density polyethylene, a benefit is gained in the overall film. The second molecule helps

anchor the ink — something particularly useful with the current interest in water-based inks. The end enhances the capability of the material to accept printing. In most cases, LLD does offer substantial advantages to the user; it's wise to check it out.

Two new suppliers have recently entered the scene as makers of LLD. Both claim technology that will result in a superior product.

Rexane is now converting its smallest pilot plant at Odessa, Texas to run LLD. It will use a new process jointly developed by El Paso Polyolefins Co. and the Montipolimeri Div. of Montedison, Milan. Both Rexane and EPPC are subsidiaries of El Paso Co., Houston. The process reportedly produces a uniform resin that requires no postreactor treatment or pelletization. Commercial quantities (copper-can quantities only) should be available in less than a year.

Arco Polymers is in "the large scale pilot plant stage" with its new low pressure process based on proprietary catalyst systems. Arco aims for full commercialization of its LLD by late 1981.

NEW SHOPPER SURVEY

A recent Louis Harris poll conducted by the Food Marketing Institute has found some interesting results.

Shoppers today, it says, are less apt to join consumer activist groups and more likely to make their preferences known to store managers.

A majority of consumers (76 percent) want supermarkets to provide shelf tags showing unit price per pound. A surprising number (62 percent) ask for more nonbranded generic products. Label information on nutrition and health is desired by 61 percent. The trend to "no frills" stores is questioned by a vote of 58 percent against it. But the chief complaint (74 percent) is against changing prices too frequently.

Judging from the poll, most consumers hold the supermarkets, rather than the packagers, responsible for helping shoppers feed their families nutritiously. About 64 percent mentioned this, up 6 percentage points from a previous poll. Since they must know that packagers are responsible for nutrition information on labels, the indication is that they want supermarkets to reject noninformative labels.

ALCOHOLIC BEVERAGE BOTTLES

Two actions, or inactions, which on their face

seem discouraging to those hoping for clearances of prescribed plastic bottles have undertones of encouragement.

The Treasury's Bureau of Alcohol, Tobacco and Firearms has at last advised the Society of the Plastics Industry that it will take no action on SPI's Jan., 1980 petition for PVC bottles until FDA takes an "unequivocal" position on the suitability of PVC for liquor bottles. However, in the same letter, BATF requests that it be supplied with sample bottles and closures for testing, which indicates that the agency has not closed its mind to ultimate clearance of PVC liquor bottles.

FDA itself has decided to give a formal advisory opinion to Monsanto on beverage-container use of its acrylonitrile copolymer with an extremely low level of residual AN monomer. But the reply raises a glimmer of hope by saying "Even if data submitted with a petition do not demonstrate that AN migration ceases, it still may be possible to issue a regulation for the beverage container use of the new L-600 (Monsanto) resin based on a risk-assessment basis."

It would appear from this that FDA has now openly embraced risk assessment as an appropriate regulatory tool, which would be a rather dramatic change of policy. Presumably, FDA might exercise its discretion to ignore *de minimis* migration of AN and declare it not to be a food additive, rather than sticking to the Delaney Clause of no migration at all.

FOOD SAFETY BILL

Initial response to what was originally referred to as the Hatch Bill is encouraging packaging interests to believe that we are at least on the way to a firm resolution of the problems of the Delaney Clause.

As introduced in the Senate, the Food Safety Amendment of 1981 is sponsored not only by Orrin G. Hatch of Utah but also by another Republican, Jesse Helms of North Carolina. Hatch is chairman of the Labor and Human Resources Committee, which probably will have custody of the bill; Helms is chairman of the Agriculture Committee.

Simultaneously, an identical bill was introduced in the House with bipartisan sponsors; Rep. Eligio de la Garza, Texas Democrat, who is chairman of the House Agriculture Committee, and Rep. William C. Wampler, Virginia, who is ranking minority member.

The bill is essentially what industry has been seeking for months. So far as packaging is concerned, it would pull the horns from the Delaney Clause by authorizing the FDA to recognize as safe

an indirect additive that shows "an absence of significant risk". FDA has indicated that it would welcome such latitude.

Direct food additives, such as saccharin and nitrite, which have a long history of use and for which there are no likely substitutes, would be regulated on a risk/benefit basis.

The path of the legislation will not be smooth. Consumer interests were quick to voice criticism. Michael Jacobson, Director of Ralph Nader's Center for Science in the Public Interest said, "this opens up an enormous can of worms, all to the public's detriment. It will undermine American's confidence in the food supply if they know that potentially cancer-causing chemicals would be allowed."

In the Democrat controlled House, the bill probably will have to pass through the Health and Environment Subcommittee, of which Rep. Henry A. Waxman of California is Chairman. A spokesman for Waxman said he had some concerns about the food-safety laws as they exist, but he had not yet studied the bill.

The best guess of Congress watchers is that the bill will not come up for hearings before September or October and that passage may take as long as two years.

UPDATE ON MICHIGAN CONTAINER LAWS

Other states have had deposit laws in force longer. Still, heavy attention focuses on Michigan because of its combination of recreation and industry. In addition, that state has received more extensive study than others on the costs and results of its law.

The bottom line thus far in Michigan can be observed in two quotes, the first from a report of a legislative committee headed by Sen. Stephen Monsma. Said the senator: "Thus there is this puzzle: Informal observations appear to indicate litter has been greatly reduced in Michigan. But the committee's scientific study shows that the effect on total litter was not statistically significant."

From Maury Young of Chatham Supermarkets: "Economically, we've created a nightmare. We're spending a quarter of a billion dollars to do a \$10 million job." He refers to the \$250-million estimated investment in '79 alone to implement the deposit program. The total annual cost to bottlers, distributors and retailers is estimated at \$150 to

\$300 million. The conclusion, Blair Smith says, is that the Michigan law requires the food and beverage industries to spend up to \$300 million a year "to achieve results that are 'not statistically significant.'"

More significant are other changes in the beverage system in Michigan that Smith points out: increased consumption of gasoline and diesel fuel by 4.3 million gal/yr; beer sales down by 16 million six-packs in '79; soft drink sales off 5 percent; glass container share up from 29 to 53 percent, while cans plummeted from 60 to 33 percent; sales of beer and soft drinks down 30 to 60 percent in areas bordering other states; and a potential loss of \$16 million/yr in tax revenues because of beer smuggling.

While aluminum recycling in Michigan has increased, the same is not true for other materials. A year ago, one bottlemaker announced it was no longer accepting crushed green glass because it had built an 800-ton inventory. About the same time, a leading steel can recycle cut its price for cans from \$145/ton to \$75/ton. The result, Smith says, is that many distributors are considering landfilling their empties.

ASPARTAME APPROVAL

An amino acid-based sugar substitute from G.D. Searle, technically known as Aspartame, has finally received FDA approval. FDA's action unlooses a package that must be one of the longest-running design projects ever.

Skokie, Ill.-based Searle petitioned for approval in 1973. Aspartame was ready for its supermarket entry with a brand name (Equal) and a stylish carton that positioned the product between natural sugar and saccharin. Both were created by Blau/Bishop.

The intervening eight years have brought many changes in consumer perceptions of sugar and sugar substitutes. So Searle carefully reevaluated the eight-year-old product concept/package design. It has concluded that both have stood the test of time.

Equal will be launched much as originally conceived. Cartons of .024 clay-coated newsback, by Container Corp. of America, share the same blue-and-white graphics. A conventional tuck-end style holds 100 and 50 packets of granular product; there is also a fifth-panel window structure for 100 tablets of Equal.

By

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LATEST RETORT NEWS

Just a few weeks ago, R.J. Reynolds Foods was flatly denying any intent to buy the Continental Kitchens line of retort-pouched foods from ITT Continental. But now we have learned that ITT did indeed sell for about \$6 million. The pouched line, still in test market, will be managed by Dei Monte, another arm of R.J. Reynolds Foods.

Continental Kitchens was the first retort-pouch brand to hit the U.S. market. It was soon followed by a la Carte from Kraft, which has been a good deal more enthusiastic. But specifics on what consumers think of the retort pouch have been meager. Since Columbus, Ohio, is the only market where both brands are available, American Can this summer sponsored an independent telephone survey to help answer some of the questions. The 200 shoppers queried all had bought packaged entrees (pouched, frozen or canned) during the previous three months.

The findings: a 86 percent level of pouch awareness, a not-so-high (23 percent) product trial. Various factors, such as pricing, shelf location and promotional support, are being evaluated to account for the fairly low trial rate.

Meanwhile American Can has launched an ad campaign in *The Wall Street Journal* touting the retort pouch, even though only a tiny fraction of that publication's national readership lives in cities where the products are on sale. The objective, of course, is consciousness raising within the financial community.

In another pouch development, Southern Packaging, one of the two remaining prime contractors in the governments' MRE I ration-procurement program, after the demise of American Pouch Foods,

won a chunk of MRE II worth \$36.6 million.

PLASTIC BEVERAGE CANS

The acceptance of polyester (PET) as a beverage container material has been so pervasive that even PET's chemical is rolling easier off the tongues of beverage marketers.

The 2-liter bottle is a clear success. The ½-liter size is collecting new proponents day by day. Even so, PET may be stymied as a direct substitute for single-serving cans. Many canners and bottlers that have been most enthusiastic about the PET bottles are not optimistic about its prospects for cans in the 12-oz or ½-liter (8.4 oz) sizes.

In the U.K., the John Waddington Plastocan is being used by four British beverage companies, including one brewer. Many brewers and soft drink companies in the U.S. confirm they are evaluating the package's potential. And Continental Can's Continental Packaging Co. reports it has an option on rights to the technology for the Plastocan by John Waddington. Thus, if the container fails, it won't be from a lack of expert nurturing.

The most obvious barrier at the moment to acceptance of the container by soft drink companies or brewers is one shared by the ½-liter bottle; carbonation retention. Most bottlers concede that the 10-week average range of retention for the ½-liter bottles is marginally acceptable, that is because most expect that technology will improve that retention in the near future. But even 10 weeks has been sufficient to convince bottlers to put the package into the marketplace.

At this point, the thermoformed Plastocan with a double-seamed aluminum end will regularly deliver

only about six weeks. The biggest problem facing the Plastocan is, obviously, obtaining technical approval from the major soft-drink companies.

Production equipment for the Plastocan, developed by John Waddington, is proprietary and would be included in Continental's agreement.

Pepsi-Cola does confirm that the PET can is in its lab for testing. But they feel, as do many industry informants, that the biggest drawback may be hardware: the beverage-filling and packaging-line restrictions. With the high-flying success of PET in other sizes, beverage marketers have changed their operations/production staffs with an intensive evaluation of the PET can.

Plastic cans have been used for years in the food industry, particularly for juice concentrates. For beverages, the perspective is different.

For a brewer or soft-drink canner, his high line speeds will force him to rethink his operation if he wants to run a plastic can. In place of the typical 1,500 cans/min. metal-can line, current plastic can-filling line speeds are in the area of 200 can/min. — and on lines specifically designed for plastic cans. That type of line is estimated to cost about one-fourth that of a metal can line.

Container distortion is another problem, particularly for the brewer that uses carbonation of 2.7 volumes and a 140°F pasteurizer. It is doubtful as to whether an economical plastic can could withstand an internal pressure of 88 to 90 lb without some distortion.

Double-seaming with an aluminum easy-open end appears to be no problem, based on the containers already in test. In addition, decorating should not present any problems in the packaging plant.

In shipment, trucks loaded a single pallet high may not cause any problems. But for brewers accustomed to rail shipping for distances over 500 miles, there are still unanswered questions about integrity. The high G-forces that can be vertically generated in rail cars could cause can collapse. Also, six-packs in some carriers could have difficulties with can-to-can abrasion.

The plastic can appears to have far more potential in the more local soft-drink business than in the regionally distributed brewing business. This is due to barriers in distribution and in the shelf-life area as well.

The obstacles appear to be formidable for now. But the answer to whether they can be overcome rests with a sizable number of researchers and technicians who are doing far more listening than talking.

NEW RECYCLING EFFORTS

Recycling PET beverage bottles is now a reality in the Southeast. In the forefront of plastic beverage bottle recycling, which is predicted to expand nationwide in the next several years, is Dixie Waste Paper Co., Memphis. Dixie is now buying PET beverage bottles from consumers at five cents per pound. Recovered bottles are then cleansed of contaminants — paper, aluminum, base cups, syrup residues — and blended with other polyesters into such packaging-related products as strapping, or converted to unsaturated polyester for fiberglass-reinforced products. The company reports that it can process and compact up to 1,000 plastic bottles a minute, into 1,200 pound bales that contain 8,400 bottles each. Other active participants in the plastic bottle recycling effort include the Continental Group's plastic beverage bottle division; Coca-Cola Bottling Co. of Memphis; Eastman Chemical Products, and Wellman, Inc., a producer of synthetic fibers. According to Coca-Cola, the Dixie collection center represents a positive force to stave off mandatory deposit legislation which results in higher beverage costs. Continental sources add that although PET bottles have only been on the market three years, recycling of the bottle is at the stage today where recycling of aluminum cans was ten years ago.

NEW PREDICAST SURVEY

Food consumption in the United States will reach 352 billion pounds by 1995, according to Predicast, Inc., the Cleveland based business information and research firm. And, all of that food will need to be contained in some form of packaging. Predicast's new analysis of food containers predicts that food container shipments will reach \$26 billion by 1995. Frozen foods and pet foods are two areas which are expected to increase in volume and create a greater need for containers. What type of containers will do well in the future? Predicast says paper will reverse its market decline due to new uses for ovenable paperboard and composite cans. Metals other than foil will remain the largest factor in food containers, says Predicast, with preserved foods still using both metal and glass containers. Plastic containers are expected to increase vis-a-vis food expenditures over the forecast period, but growth will be limited by low barrier properties and manufacturing cost increases.

OVENABLE BOARD UPDATE

When ovenable paperboard was first introduced, many in the industry looked forward to huge and explosive growth. Now with a period of maturity, new applications for ovenable paperboard appear to depend on three of the material's distinctive properties: compatability with microwave ovens, cost, and appearance.

The ability of the paperboard container to function in microwave ovens is a key criterion for continued growth as a package for frozen entrees. While foil's cost may be comparable, ovenable paperboard continued to benefit from a consumer perception that foil cannot be used in microwave ovens.

Ovenable board containers are making inroads among bakery products where they provide a savings. They can be used in commercial ovens and overwrapped for distribution. Developments in board coatings are yielding containers better-suited to this end use.

Improved presentation of the food also plays a role in expanding applications. Containers with printing on the inside hold promise for use in foodservice outlets where they can be decorated to coordinate with other packaging and improve food presentation. Trays that more closely resemble china may have a stronger appeal among frozen food manufacturers.

The proliferation of ovenable board container sizes, coatings and production options increases the chance that a specific container will fit a given need, but also complicates packaging decisions.

It is interesting to note that the concept of dual-oven food packaging is not limited to paperboard — especially when the package holds a quality, high-value entree and the processor sees the need for packaging that reflects the product's premium price.

A viable packaging option is the molded, thermoset polyester tray. One version available from Plastics, Inc., St. Paul, is approximately 8 in. long, 5 in. wide and 3/4-in. deep; it holds an 11-ounce serving.

Used for Armour's Dinner Classics line of pre-plated entrees, the Hi-Heat package won the Package Institutes 1980 Corporate Award. Uses for retail products have been expanding with one of the latest being gourmet Mexican-style dinners distributed by Safeway on the West Coast. Price tags for the entrees range up to nearly \$4.00 per serving.

According to a spokesman for Plastics, Inc., the container's china-like appearance enhances the food's quality image, making the 14-cent-per-tray

cost worthwhile for the food processor selling a \$4.00 entree.

The rise of "super-premium" prepared dinners aimed at an upscale consumer is spurring demand for this type of packaging. Interestingly, the container's relative cost has been decreasing in recent years. When introduced for airline feeding applications more than a decade ago, each container cost about 15 cents. Automation of the production operation, including mechanical trimming and finishing the tray, has held the cost to that level, despite inflation.

Although the volume offers economies, it also limits the sizes and shapes most economically available. Variations require different tooling and added labor that would make them more expensive than the standard configuration.

The Plastics, Inc. spokesman noted an additional factor that could make the container more attractive for food processors. Contract filling capacity and experience already exists among firms that pack containers for foodservice uses. That minimizes an investment to perform a test market for the container.

PACKAGE DEVELOPMENT (THEORETICAL)

The first step in the development of a new package or the appraisal of presently used packaging is to make someone responsible for it. It is a common experience among those in the packaging industry to find they can effect large economies for their firms. A fully integrated packaging development program is usually the responsibility of a packaging executive who may be called a manager, director or coordinator. In some firms committees, reporting to an executive, are organized to manage the package development function (see Table 1).

Table 1. Personnel Involved in Packaging Decisions

Company Presidents	Plant Managers
Chairmen of Boards	Sales Development Managers
Advertising Managers	Packaging Engineers
Purchasing Directors	Project Engineers
Promotion Directors	Packaging Coordinators
Attornies	Sales Managers
Suppliers of Packaging	Materials Supervisors
Materials	Art Directors
Brand Managers	New Product Directors
Packaging Managers	Sales Coordinators
Marketing Directors	Consumer Research Managers
Production Engineers	Secretary-Treasurers
Advertising Agencies	Packaging Group Leaders
Outside Consultants	Corporate Design Directors
Directors of Research	Directors of Operations
Technical Directors	Market Specialists

Many different procedures are used by companies in developing a functional package. Assuming that the initial sales potential is acceptable for the projected package, one basic developmental path may consist of the following steps:

State the Objective

Is it a new package or a modification of an already existing package? What is the reason behind the development — new image, cheaper material on the market or new process? Is it a new promotional pack such as a “two for one” powdered dessert?

Determine the Developmental Time Available and the Budget

How long is the project scheduled and how much will it cost? Is it worth the final cost? Will the consumer pay a premium for the package?

State the Problem

Define the Product. Is it a solid, liquid, paste or powder? Is it massive, chunky, granular, or powdery, if a solid, or watery, and thin, or thick and viscous, if a liquid? Is it soft and light or hard or dense? Must it be protected from light, heat, climate, moisture, odor, insects, bacteria, shock or pressure? How much protection from each is needed? Are there any particular hazards? Is it poisonous, corrosive, sharp, flammable, explosive or radioactive? What is the required shelf-life?

Define Manufacturing Requirements. What quantities will be produced? Is there equipment already in-house to do the job or must new machinery be purchased? How about storage space and manpower requirements? How fast should the production lines run and how will the final product flow into existing lines? Is a contract packager needed? What other factors influence the method of packaging or type of material used? Is special warehousing needed because of climatic control or pallet stacking?

Define Marketing Objectives. What will be the package size and contents? Note the channels of distribution, and methods used to carry and store the product. Are easy opening devices, reclosure features, pilferage protection necessary? How will the product be displayed — on a shelf, peg or aisle promotion? Who will buy the product and how do they use it once it gets home? What legal or regulatory restrictions are needed? Are there any

religious restrictions on the package? What quality of print is needed for sales reasons?

Define the Economic Parameters. What is the final proposed sales potential for the product? Does the selling price include a sufficient profit margin to recovery the developmental cost in a reasonable time? Will the consumer pay a premium? What special features will the package have to have to command such a premium? What quantities of packaging must be ordered to gain most favorable prices from suppliers? Is cash available to invest in machinery? If careful market research is not done at this point but deferred until the test market stage, a great deal of development cost may be spent only to find out that the package meets all requirements except the economic ones.

Produce a Package Profile

After all the questions to the above are thoroughly answered, the package developer (or committee) then draws up a package profile. The detailed profile lists the product characteristics, protection required, merchandising, storage and handling requirements and the cost parameters. The profile should be distributed to those interested parties and approved prior to the next step.

Search Out Both Materials and Machines for Development

A thorough examination of existing materials and packages must be conducted by the packaging coordinator. Here, the package supplier should be consulted for ideas and possible samples of new packages. Are there special resins or films on the market? The packaging coordinator must gather together all the possible answers to his materials problem, and not stop until he is satisfied that he has found broad solutions.

Just as a search was made for possible materials, a similar search should be conducted to study all of the types of packaging machinery available. Catalogues and exhibitions should be studied until the packaging coordinator knows exactly how each package he suggests can be made, what production speeds may be, what the availability of the equipment is, how much it costs, etc.

All the alternatives should then be priced out in terms of the quantities needed. This figure should take into account the hidden costs of transportation, storage, production line-time, etc.

This discussion will be continued in a future Newsletter issue.

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PET BOTTLE EXPLOSION

In five years we have seen the saturation of the 2 liter PET bottle market in the U.S., and in Europe the 1½ liter bottle has made big gains. The entry of half liter bottles into the market this year could make a substantial difference to the amount of PET used for beverage packaging.

Now other markets are opening up for PET. Attempts are already being made in the U.S. to obtain permission to sell bourbon in PET bottles, a market which could involve some 200 million bottles a year. In Japan Sapporo Breweries is now selling lager in two liter bottles and an entry into the wine market is anticipated in the near future.

Cider is now packed in PET in the U.K. and in addition to the beverage markets, other areas are now opening up. One resin manufacturer estimates that the food container market in the U.S. will equal the half liter PET bottle market by 1984, with both markets each consuming about 23,000 tons of resin annually. It is also predicted that by then 12,000 tons will be used for liquor packaging, 7,000 tons for pharmaceuticals and 5,000 tons for cosmetics. In addition Europe could be consuming 90,000 tons a year by then, with one third of that being used in the U.K.

AUSTRALIAN FOOD PACKAGING SEMINAR

A very interesting seminar devoted to food packaging was recently held in Australia. Sponsored by the Packaging Council of Australia, NSW Division's Food Packaging Seminar was a very successful session. Here are abstracts of several of the most interesting papers.

Aseptic Packaging

The development of the process began with milk, where the combination of rapid heating and cooling is known as Ultra Heat Treatment or UHT. The normal UHT temperature-time treatment is 135–140 °C for 2–3 seconds for milk compared with pasteurization at 73–77 °C for 15 seconds. The higher temperature achieves complete destruction of microorganisms capable of growth. Fruit juices can be treated at much lower temperatures.

The first packaging method was in metal cans using high pressure steam sterilization. The next development used chlorine and this was later replaced by hydrogen peroxide which is still the basis for sterilization of flexible films, board and laminates. The third method known as Rommelag or Bottle Pack fills a blow-molded plastic container while it is still in the mold after molding, and uses the heat necessary to form the container as the sterilant.

The essential nature of an aseptic operation is that it must be able to operate in a non-sterile factory environment. With the development of greater speed, stop/start ability, and the ability to pack a range of sizes, aseptic is rapidly emerging into the realm of a normal packaging operation instead of being a specialized difficult operation.

A wide range of products can be aseptically packed including baby foods, soups, custards, desserts and many others. The saving in refrigeration for perishable products is a great advantage in a world becoming increasingly conscious of energy costs. The system of aseptic packaging is now well-established and we can expect to see a lot more of it in the food industry.

Retortables

Retortables developed from an idea by a Swiss engineer and due to a series of developments in foil, lacquers and form-fill-seal machinery, the Alupack system was born. Today more than 1000 million containers are filled annually with this system alone, and many more from similar competitive systems.

Container sizes range from 9 up to 500 milliliters, usually in standard sizes, though they can be "tailor made." Side walls and base can be printed, though the walls, being pre-printed before being drawn, cannot have intricate designs. Various grades of lacquers are now available to handle all situations covering flexibility to withstand the container forming process, bonding ability under heat and pressure, and inertness. Lids are of paper/foil, or heavier foil for retortable products.

Products which can be filled in these packs include jams, honey, marmalade, fruit jellies, sauces, mayonnaise, salad dressings, butters, etc. Line speeds are lower than cans but this is outweighed by cost, versatility and convenience.

Bag-in-Box

Bag-in-Box liquid pouch packaging first saw the light of day in the early to mid-sixties as a battery acid pack. Around 1971, wine started to appear in the bag-in-box concept. Today over 50 percent of all table wines consumed in Australia are bag-in-box. Fruit juice bag-in-box packs are estimated to reach 5 million units in 1981. The U.S. wine industry is poised to promote retail consumption of wine casks, and edible oils and other dispensable vegetable oil products, laundry and kitchen detergents will follow.

A new bag-in-box system has also just been introduced by a major salad dressing producer for their products. It comes with a metal dispensing unit and readily dispenses products for food service applications.

Three new dispensing valves are soon to be available and new high-speed filling equipment has been and is continuing to be installed by wine and other beverage users of the concept. One system developed uses a membrane to improve barrier qualities of the package and a new valve. Another innovation, the JJ valve, is the result of two years development. Independent tests have confirmed oxygen permeability values of the JJ valve as substantially lower than any of the currently available valves. Flow rates in 4-liter pouches have consistently been less than 60 seconds.

The major breakthrough in oxygen barrier and flex crack resistance occurred with the introduction

three years ago of metallized polyester laminates with ethylene vinyl acetate copolymer films. This coincided with a significant surplus output of wine and the opportunity has probably been lost forever by the wine industry to upgrade wine casks from the discount end of the market.

The extension on the bag-in-box concept to new markets has been rather slow. Potential users must see the opportunity for growth without reduction of market volume held by other containers as has been the case with wines and fruit juices.

The availability of functionally effective films and laminates now ensures that almost any product can be packaged in bag-in-box. Even carbonated beverages will probably be in bag-in-box before 1985.

UPC ROUND-UP

How many readers are aware of exactly how a barcode reads or can even be misread? Here are a few well-needed hints at achieving barcode success in the marketplace!

(1) Barcodes do not have to be printed in black on white. The operation of the scanner depends upon the recognition of the contrast between the dark bars and light spaces of the symbol. This recognition can be affected by various factors such as:

- a. Reflectance factor and reflection density.
- b. Geometric conditions for reflection measurements.
- c. Spectral conditions for reflection measurements.
- d. Color. The low density helium-neon laser views colors in a similar way to the Wratten 26 filter and the scanner has a spectral response in the magenta, red, yellow band with bar patterns printed in these colors having a high reflectance value with little or no contrast against a light background.
- e. Show through. In some packages, the product or some basic inside material may show through the light areas to an extent that it will affect the reflectance value.
- f. Finally, print contrast and readability can be affected by specularly reflecting substances such as foil and various obscuring patterns.

(2) The choice of colors is readily appreciated when referred to absorption and reflectance of a red laser light. Typically, the dark bars can be black, blue, green or dark brown. The background can be white, red, or yellow. The checking of the color can be carried out using special equipment or by using a standard densitometer and appropriate filter. For most designs, color selection is not a major problem. However there are several problem areas including:

- a. If a design contains only reflecting colors, i.e., white and red, then a further color will have to be added.

b. All "bar" colors should be printed in a single pass, i.e., not as an overprint.

c. Metallic bases such as aluminum or tinplate have a low diffuse reflectance and behave as a "dark" area. A double pass litho printed white or white coating may be necessary on these for cans.

d. A transparent flexible packaging, adequate opacity of the white background printed by flexo or gravure must be achieved.

In order to give a scanner a realistic chance of reading a symbol, it is clearly better for it to be nearer the base of the package. Also, supermarkets wish to have maximum efficiency at the checkouts and some degree of standardization of location is necessary so that operators spend a minimal time looking for the symbol. To this end, symbols should be placed on the natural bottom or within 2 inches of the base. Frequently it will appear on the back of the pack; the third preferred location being left of front.

(3) It is the ratio of dark/light that is critical to the laser scanner. Each digit is built up from two dark and two light lines, and the bars and spaces vary from 1 to 4 modules, or units in width.

If a bar varies in width, then the space in between will vary and it is clearly essential for a printer to know how thick a line he will print from a known original and how much it will vary under normal production conditions.

In using the printability gauge it must be appreciated that it is essential to obtain results over a wide range of designs, machines, operations, substrates, etc. It is also quite crucial to ensure that the gauge is incorporated into the original or plate at precisely the same time in the reproduction cycle as the symbol would be, and as near as possible to the ultimate symbol position.

Assuming that the printer has carried out all the printability gauge studies, he will be able to advise the customer/designer on the symbol size that can sensibly be printed and this will not necessarily be the smallest possible. The designer has a very difficult job. A few checkpoints may be useful:

- (1) Which color will be used for the dark bars?
- (2) Which color will be used for the background?
- (3) Do all printing plates have to be changed?
- (4) Will print sequence have to be changed?
- (5) What is the printing direction?
- (6) Has enough space been left on each side of the symbol?
- (7) Are there any package features to be avoided, i.e., heatseals, etc.
- (8) Is a short version symbol essential?

IMPROVING PACKAGING LINE PROFITABILITY

The ability to run a packaging line both efficiently and profitably is one of the most important concerns of the food packager. Peter Douglas in *Australian Packaging* (May, 1981) sums up the major problems to be overcome in a most succinct manner. Here is what Mr. Douglas of ACI says:

Few filling lines operate at optimum efficiency; many are appallingly inefficient and wasteful.

The filling line does not exist in which the cost effectiveness cannot be improved. Even assuming competent maintenance and machine setting and conscientious operation, this is still the case. If we take the filler as the prime unit and whether the product is liquid, cream, powder or granule, very few would better 90% running efficiency. That is, after taking out lengthy stoppages for major breakdowns, set-up, labour disputes and meal breaks, very few fillers would run 55 minutes or more out of every 60, and the filler is only making money while it is running. Overall efficiency, that is running time as a proportion of the total day's work, would rarely exceed 80%. On a line with the filler operating at a modest 100 units per minute, this represents a loss of 9,600 units for an eight-hour day, at 500 units per minute, the loss is 48,000 units per day.

In many cases, considerable improvement may be achieved just by balancing conveyor and machine speeds at virtually no dollar outlay. More significant gains may be made with relatively small cash outlays. These would be in the nature of provision of more accumulation between line units or modifications to enable machines to operate say 10% faster. As would be expected in any operation, the outlay must be equated against improvement in output.

The key concept in any filling operation is "the filler must not stop," and any filler given competent maintenance, setting and operation is capable of 90% efficiency. In planning output then, if the filler requirement is 100 units per minute, then the actual filler rating should be 110 units per minute. Sufficient accumulation should then be provided between each operation to cover three minutes for most machines, or perhaps four minutes for a depalletizer to allow for reloading a full pallet.

The requirements for overcoming the problems and improving line efficiency are: a methodical metre by metre study of the operation, application of simple engineering principles, some primary school arithmetic, some cost versus output evaluation, and a good slice of logic.

A series of surveys over several running periods of at least one hour with subsequent analysis will pinpoint the machines or conveyors requiring speed alterations or sections of the line conveyors requiring modification. Speed adjustments may often be made on the spot (provided the drives are variable speed units) with immediate gains to productivity. Then follows further adjustments and further observations until the optimum, say 91% is reached. Typical of the type of information that will emerge may be that the labeller needs to be speeded up by 5% or 30 seconds additional accumulation is required after the rinser. Included in this must be due consideration of tolerance of the containers to line handling stresses.

This type of study may have immediate effects on production, and examples exist of line efficiency being raised from a miserable 45% to a reasonable 75% simply by conveyor speed and machine rate adjustments.

On the spot surveys are often lengthy and tedious and a far more effective and efficient means of achieving the best balance is by computer line simulation. With this program data, such as conveyor and machine speeds and accumulation capacities, are fed into the computer. The computer then simulates a series of stoppages of random duration and frequency, thus measuring the cumulative effect on the overall efficiency of the line. Theoretical adjustments may then be made and the program re-run. When an optimum figure, usually 90—92% is reached, the parameters are held firm and line modification proposed. The program is even more useful when planning a new production line.

One frequently sees very fine and modern units on a line restricted to 70% of their capability by outdated, slow or poorly functioning machines further along. This is wasting the outlay as well as increasing the cost of production and restricting output. A typical computer line survey will cost less than \$7,500 and is usually fully justifiable. A typical instance is the case of an aerated liquid product in which a line newly installed took three months to

reach the maximum 87% efficiency. The proprietors planned to duplicate the line in another State, but, wisely, chose to submit the proposal to computer line studies with the result that the duplicate line reached 85% after three days and peaked at 93%. Another large soft drink manufacturer with a newly installed line had not bettered 45% after 18 months. A line study with rate adjustment and further expenditure of less than \$20,000 resulted in an improvement to 85%, saving the cost of an entire shift.

The improvement of filling performance is a logical step by step process. There is no magic wand. It is mandatory to accurately record the filler stoppage frequency, stoppage origins and their duration. If a person in management levels can be persuaded to do the work, and not interfere with the process while he is there, the results will be beneficial both to the manager and the plant. (It is surprising how little many managers know about their plant.)

In all of these, the most important factor is the attitude of managers and supervisors to the concept that "the line must not stop." There are many factors outside the line that will also affect performance and these may have a greater effect than those within the line. These are functions such as programming for maximum length of run, setting up of the line outside of normal operating hours to ensure maximum utilization of production staff, change of shift "on the run," product availability (no stopping to clean filter, bypass them through duplicate filters) and above all preventive maintenance reducing or eliminating stoppages due to poor mechanical condition of machinery. Nothing will hurt employee morale and destroy the will to work more than a line that is forever breaking down. These factors belong squarely in management functions. Management attitudes are inevitably communicated to the factory floor and if they are poor, performance will be poor.

It is absolutely essential that every person in the establishment understands that the "filling line is only making money while it is running."

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Newsletter FOOD PACKAGING AND LABELING

By

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NEW PACKAGE EMERGES

In the highly active field of beverage containers, two new uses have been found by Metal Box for its two piece aluminum can and PET bottle.

As part of a new venture to test canned wine in the U.K., red and white French table wine is now being test marketed in a 33 cl. can in selected retail outlets in the U.K. Following research work carried out at its R&D center at Oxfordshire, Metal Box has produced a can for wine, which the firm claims has shelf-life of more than six months and which has no effect on the flavor of the wine. The company believes the container will be an ideal travel pack as it is light in weight and unbreakable and will also be suitable for outdoor consumption where only a small unit is required.

A further market breakthrough has been achieved with the introduction on a test basis by Bulmers of its Woodpecker medium sweet cider in a two liter PET bottle. Bulmers believes PET bottles will be ideal for this type of drink that has a traditional take-home market accounting for almost half the annual production of cider. Following successful test marketing in the retail grocery trade, Bulmers is now continuing to test the bottle in selected supermarket outlets. Cider is believed to be the first alcoholic drink to be sold in a PET bottle, both in the U.K. and elsewhere.

METALLIZED FILMS — OUTLOOK

For converters and end-users, metallized films have become not only an attractive but a viable material option. These products have graduated from appeal as essentially "pretty faces" to com-

mercially advantageous functional ingredients in various constructions. Widely utilized in the packaging industry, an assortment of metallized film applications are also increasingly found in such functional applications as insulation, photographic and photocopying processing, electrical conductivity techniques, solar control, aerospace, and a growing list of others.

These applications join the essentially decoratively-oriented uses which led the way for metallized films: wallcoverings, hot stamping foils, automotive trim, decals and labels, fashion yarns, etc. And these uses, too, are expected to grow as new products and new markets develop.

Packaging, however, continues to be the largest and most rapidly expanding application employing metallized films as a functional component. Food, drug, cosmetic and industrial packagers are building in the moisture, oxygen and light barriers that metallization offers to protect products at an increasing rate, while gaining unique esthetic appeal at the consumer point-of-purchase level. And among these, metallized films in flexible packaging have become the most prevalent.

When evaluating any packaging structure, material or system, it is to be remembered that the packaging of products takes place through several manufacturing steps. Collectively, these steps produce a durable attractive package that suitably protects its product until purchase and use. The story begins with polymer chemistry laboratories and the producer of the base films. The film first goes to a metallizer where by sophisticated vacuum deposition techniques a precisely controlled amount of metal is plated onto the surface of the film. Next, at the converter level, follows the printing and combin-

ing or laminating of the metallized film with other films producing the final construction which in turn is provided to the packager-user. There it undergoes forming, filling and sealing to produce the final package.

Any change in the base film has effects then all along the line. Until recently, the base film for metallizing was almost invariably polyester. The biaxially oriented nylon came along, and now biaxially oriented polypropylene and low density polyethylene. And all this has happened in a relatively short time.

METALLIZED SUBSTRATES

Polyester

Description: A biaxially oriented polyester film, surface printed, laminated to polyethylene film.

Single-lamination performance matches or exceeds both other 3- and 4-ply laminates and foil laminates.

Advantages:

- Stiffness
- Excellent MVTR and O₂TR barrier
- Light barrier prevents oxidative rancidity
- Bright foil appearance
- High slip, heat resistance
- High tensile strength
- Static free

Polyester film has been sold in the United States since the early 1950s. Polyester is easy to metallize but does not give all the ideal properties for all applications.

The demand for polyester film is undoubtedly based on its combination of optical clarity, dimensional stability, toughness, strength and durability.

Although foil has been replaced by metallized laminations at several accounts, foil sales have not suffered greatly as a result of the introduction of these laminations because in most cases the displaced packaging material was not foil. In fact, it has been speculated that the use of foil may indirectly increase in the wake of a rebirth of the esthetic qualities offered by metallic packaging.

If metallized films offered only glamour, it would have been a fad and probably would have been discontinued by now. But, it also offers outstanding barriers, like an oxygen rating of .05, an MVTR of .03—.05, and a 98 percent light barrier (which is particularly important when packaging natural style snacks). Add to this, static-free machineability and a heat seal range of from 200—400 (when laminated or coated) and it is easy to see why it has become a winner.

Both laboratory and field evaluations have shown that for many applications a metallized polyester

structure can offer equal or better protection when compared to a package made with aluminum foil.

In a field test of gas-flushed dry roasted peanuts both the metallized polyester and foil laminates maintained the oxygen level of less than 2% for a one year period. The excellent barrier properties produced by metallized polyester have been confirmed in numerous tests conducted on commercial coffee packs.

The first known use of metallized polyester for coffee packaging was developed by Elkin Coffee, Inc., of Bow, NH. The firm got improved shelf-life, appearance, and machineability when it adopted a metallized/polyester/polyethylene laminated from Saran coated OPP/PE lamination. Shelf-life was doubled due to the low O₂ permeation rate. The coffee pouch is flushed with nitrogen. Storage observations suggest that the coffee could be held in its packages for up to a year, depending on package condition and seal integrity.

The coffee roaster uses the same packaging equipment used to run its former package. The metallized package has sharply reduced static electricity problems in the form/fill/seal equipment. Previously, the coffee company had static eliminators on their equipment, but even with these devices, imperfect seals caused by static and coffee were a problem.

The moisture vapor transmission rate and the oxygen permeability of metallized polyester make it suitable for a wide variety of packaging applications. Marketers of potato chips have begun to find that this type of package not only increases shelf-life, but has a positive effect on sales, presumably due to the superior esthetics of the package. Among other things, it does not look shopworn after handling and does not attract dust due to static.

In the future, heat sealable polyester, which can be metallized, will probably be used in many applications where a single web construction is desired.

Nylon (BON)

Description: A biaxially oriented nylon film, surface printed, with excellent adhesion and brightness; ideal for gas flushable laminations, such as those used for institutional coffee.

Advantages:

- Soft Hand
- Excellent O₂TR barrier
- Excellent flex-crack resistance
- Good sealing at a wide temperature range
- Good anti-static properties
- Excellent graphic capabilities
- Superior for gas-flush packaging applications

Comments: There is an expanding use of the film

for gas flush packaging particularly for coffee where the properties of softness, O₂ barrier and flex crack resistance are put to its best advantage.

The coffee packagers began making the transition from the previous Saran-coated polypropylene laminated to polyethylene in 1978. Another converter said: "The material also has a wider sealing range, which again gives increased line efficiencies. Slightly less expensive than the previously used Saran-coated polypropylene — polyethylene lamination, metallized nylon is also thinner. A roll of the old material yielded about 10,000,000 linear inches while we get 9.5MM to 15,000,000 linear inches of material in a roll of metallized nylon. This reduces the amount of warehouse space we need. We get a better shelf-life (six months) as well as lower leaker rates, better machineability and also the elimination of static. Because of the improved machine performance, the overall film usage is less, allowing us to give customers a better package at no increase in cost.

This company found that longer runs were indeed possible. With gas flush, two weeks of material could be run at once. Fewer changeovers improved productivity substantially.

This coffee packager stated that he has improved machine productivity: "The plant has found the nylon material to be very machineable. With static substantially reduced, we no longer have coffee in the seal area where it can cause leakage. Nylon is soft, so we get more conformity in the seals than with other materials like polyester. Since nylon has a high melt point, we've raised our seal bar temperature higher than with oriented polypropylene to further assure good sealant flow. Overall, we wind up with more usable packages per hour than before. And because the new material is sturdy and flex-crack resistant, returns are minimized. The matter of extended shelf-life was incontestable, based on our own observations and results reported elsewhere."

The oxygen barrier performs even better than the company had expected. After five months of testing, permeation of less than .0025 percent of oxygen was detected. The company considers anything less than 1 percent to be acceptable. Further, there is little or no flex-crack difficulty and sealing has been superior.

Polypropylene (OPP)

Description: A coextruded, biaxially oriented polypropylene film, metallized on the non-sealable side, with adhesion and brightness ideal for producing attractive laminations with reverse-printed clear

films outside and metallized polypropylene as the inner web, giving locked-in printing and many operating advantages.

Advantages:

- Excellent hot tack and wide seal range
- Bright foil appearance
- Light screening to prevent oxidative rancidity
- Excellent MVTR and O₂TR barrier
- Superior film flatness

Summary: A 90 ga. all-polypropylene film lamination of reverse-printed, clear, oriented polypropylene, bonded to a coextruded metallized polypropylene film with a heat-sealable side, offers these unique packaging advantages:

(1) Superior moisture-barrier qualities. A typical lamination ensures less than 0.1 g/24 hr/100 sq. in. Without metal, the lamination would produce an MVTR barrier of more than 0.25 g/24 hr/100 sq. in. Thus, the freshness of the food product is greatly extended.

(2) A better-than-98% barrier that reduces oxidative rancidity generated by both visible and UV light. (Oxygen in the air, catalyzed by light or ultraviolet light, combines with oils in foods resulting in stale taste. As elimination of oxygen is a difficult process, it is far easier to eliminate light.) A Rutgers University study pointed out that clear films permit up to 700% the rancidity as compared to metallized films with a plating level of 2—3 ohms/square. This represents 2% light transmission with use of metallized films.

Additional major advantages for the packaging end-user include "locked-in" printing, and the ability to lap-seal. With the metallized sheet on the inside of the lamination, the outer web can be reverse-printed with the same inks and color sequences currently used. The material will run trouble-free, e.g., won't jam, crack or tear, as it runs through existing horizontal or vertical form/fill packaging machines, without the ink scuffing or pick off that might be experienced with surface printing.

One converter's plant manager noted that "A metallized OPP lamination runs better with improved processability on our equipment, which includes three different model vertical form-and-fill packaging machines. The previous construction was a metallized PET/glassine paper lamination with a heat seal coating. OPP seals at a lower temperature providing the benefit of both energy savings and longer life for heat elements. The attractiveness of reverse-printed, locked-in graphics and more gloss maximizes the package's visual impact. It also, has the capacity to hold air, giving it a desirable "puffed" appearance. We've achieved both product cost savings and ease of processing, while gaining a

package with superior shelf-life and consumer appeal.

Although the "feel" of metallized OPP is different from foil, the appearance of the new package is identical, and, we haven't had any problem with the package reflecting that "crushed" look after its shipping case has been transported from plant to retail outlet."

By laminating clear reverse-printed polypropylene to the outside of the metallized polypropylene web, converters have now come up with an all-polypropylene structure that offers distinct advantages. Reverse printing techniques, familiar to any converter, require no change in equipment or processes. In producing metallized polypropylene packages converters use the same inks, same color laydown sequence (without expensive press clean-up) and essentially the same adhesive systems currently used with other laminations. In addition, any and all printing wastes are generated on relatively inexpensive uncoated film. Liked best about polypropylene was the locked-in print, improved gloss and elimination of any possibility of ink build-up on the heat seal jaws of their equipment.

Others

a) Low Density Polyethylene

Description: Polyethylene can be simply defined as a polymer of ethylene produced by additional polymerization. Its characteristics include...

Advantages:

- Good electrical properties
- Good chemical resistance to solvents, acids and alkalies
- Toughness and flexibility even at low temperatures
- Good barrier properties
- Adaptability to processing techniques
- Relative low costs
- Reasonable clarity

b) PVC

c) Polystyrene

d) Polycarbonate

e) Cellophane

From: A paper presented by R. J. Irmen, *R.J. Irmen Associates* entitled *Metallized Films Are Not Just a Pretty Face*, Philadelphia PACK INFO (1981).

CANS AND BOTTLES AND BEER

The battle between cans and bottles goes on with cans having the definite edge. However, in recent

years since the introduction of mandatory deposits on containers, and especially the double tier deposit system in Michigan, cans have lost some share of market to one-way bottles.

In 1979 and continuing in 1980 there was also the first significant increase in keg beer in 20 years — about 2%. This trend is expected to continue for the next few years and probably level off at about 15% of the total. Returnable bottles did appear to be moving upward for a spell but this was of slight duration and the people are once more reflecting their preference for convenience.

The fight between steel and aluminum cans centers on price rather than on the relative quality of the containers. There are solid arguments for both sides, but there is no doubt, at least for the present, aluminum does have the upper hand. There is also no doubt that the recycling advantages for aluminum have a lot to do with their dominating position. Similarly, there does not appear to be any doubt that in the long run pricing would favor steel.

The battle will continue for some time to come. As to which metal will be the ultimate winner only time will tell.

The glass industry is trying to take advantage of the present mood. This is aptly illustrated by the expensive TV ads which are sponsored by Owens-Illinois and expound that beer in bottles tastes better. The important thing is that glass as a beer container can compete with cans in every aspect except in the *total* cost of packaging. The main things going for glass are that no other package compares in terms of impermeability and purity. They can be used once and disposed of usefully or remelted and made into new glass: or, they can be refilled. Glass bottles can also be transparent or opaque and in an infinite variety of colors, shapes and sizes. In short, glass is well-equipped to compete successfully in this industry.

It has been said "that to be up-to-date means to be on the verge of becoming out of date." What this means is that we have to be constantly weighing the implications of the changing demographic, economic and social trends in order to provide a framework for planning future strategies.

The main competition for the beer industry are soft drinks, wine and spirits and mixes and juices. Presently, beer enjoys 31% of this market while soft drinks has 46%, mixes and juices are at 18% and wine and spirits 5%. The projected annual growth rate for the beer industry is 3% which is about the same figure being projected for soft drinks.

(To be continued)

From: A paper presented by J. A. Ciszewski, *Jos. Schlitz Brewing Co.* entitled *The Beer Market*, Philadelphia Pack Info (1981).

By

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NEW LABELING REQUIREMENTS

With the question of salt labeling, voluntary or mandatory, still unresolved, consumer interests are attacking food labeling on a new front. Ralph Nader's Center for Science in the Public Interest is demanding that FDA require labeling of sugar content, as well, on the ground that sugar is a health threat long ignored.

The Nader group also calls for an educational campaign to "balance the barrage of TV advertising that urges Americans to eat sugary foods from a very young age." Nader isn't thinking only of children's teeth. He says sugar contributes to serious health problems such as nutritional deficiencies, obesity and diabetes, high blood pressure, and behavioral disorders.

Education is also on an objective of FDA's campaign on the salt question. Commissioner Arthur Hull Hayes told a recent consumer meeting that neither mandatory nor voluntary labeling of sodium content would alone solve the problem of production and distribution of low-sodium foods.

"One of the most important aspects of this problem" the Commissioner said, "is consumer education. It is no good labeling unless consumers ask for these products in the stores. No retailer in his or her right mind will load the shelves with a nonmover."

Commissioner Hayes said both FDA and USDA are taking action to alert consumers to the salt problem. But the most effective way to get to consumers, he said, is through other consumers.

If this sounds like the Commissioner isn't going to push for sodium labeling, it is not a certainty. He said recently that unless voluntary labeling has made substantial progress within a year, he will

support mandatory legislation.

CHANGES IN METRIC BOARD

Add the U.S. Metric Board to the list of agencies sought to be abolished by the present antiregulatory administration. The White House has asked Congress to do away with the Board by March 31, 1982. The death sentence is contained in a Senate amendment to a House-sponsored appropriations bill which still has to be adjusted and voted upon.

Packaging industries which have voluntarily adopted metric sizes and dual declaration of contents, notably the wine and spirits industries, are not likely to change. Other packagers who have incorporated metric measurements in their labels would do well to stand by their guns, because there is general agreement that metric is a principle whose time has come. The question is how and when the change will be effected.

There is no question that the present Metric Board has been ineffectual through no fault of its own. When Congress established the Board in 1975, it was torn between vigorous proponents and vocal opponents of metric conversion. As a result, the law was an ambiguous compromise, creating no deadline nor even a commitment to change. It simply told the 17-member Board to "coordinate voluntary conversion to the metric system."

The whole effort was so lightly regarded that President Carter waited two years even to appoint the Board members. Since 1977 the Board has been waiting for a proposal to "coordinate," meanwhile holding public meetings around the country and hearing arguments pro and con for metric.

The American National Metric Council, a private group of "pro" interests, has been working hard. It has just completed conversion plans for two industries — industrial chemicals and instruments — and is ready to submit them to the Metric Board for its first real try at "coordination," only to find that the Board is apparently going out of business. Reportedly, the ANMC will go ahead with its forms submission regardless.

The last word on this has not been written. If the present Metric Board is indeed abolished, it will have to be replaced at some point with a more effective agency. But the goal of an "orderly conversion" to metric by 1985 now looks out of sight.

OVENABLE PAPER TRAYS

As part of a complete upgrading program, La Choy Food Products, Archbold, Ohio, has now converted its frozen dinner and entree packaging into three sizes of ovenable paperboard trays from aluminum foil containers.

That switch joins improvements in product formulations and bolder outer carton graphics in a concerted effort to add more consumer appeal to this prepared food line. Six a la carte entrees (shrimp chow mein, beef pepper oriental, chicken chow mein, and three others) are now packaged in one or two sizes of Pressware trays from International Paper Co. Those named three entrees are combined with sweet and sour fruit and vegetables and fried rice as dinners in a Pressware three-compartment tray.

In part, the decision resulted from the company's market research. It tied its frequent users closely to the small households who also patronize fast-foods restaurants. The key is convenience.

Recently completed reports indicate that microwave oven usage will enjoy a 45-percent penetration by 1985. It was precisely this microwave trend that attracted La Choy to the ovenable paperboard container. The same line-up of products had been packaged in aluminum foil trays with a foil overwrap.

Although there was nothing wrong with the aluminum package, consumers would not use an aluminum package in a microwave oven. The new carton consists of a polyester-extrusion SBS paperboard which is transparent to microwaves; the coating permits its use in conventional ovens to 450°F.

In addition to its functional benefits, the heat- and pressure-stamped containers offer a graphic potential unmatched by aluminum foil.

SCANDINAVIAN PACKAGING

With their vast forests and huge involvement in the production of paper and board, it was natural that Norway, Finland and Sweden became involved in packaging but now the exports from these three nations as well as Denmark include a great deal more than wood-based products. Finished packages, raw materials and machinery for a vast range of industries are now exported.

With their relatively small populations the Scandinavian countries have to export to justify the investment in research, equipment and their environment, and interest in preserving it has led to the development of many interesting packages which have found uses throughout the world.

The Tetra Pak carton which started in a corner of the Akerlund and Rausing factory is now made in many other countries and last year, over 30,000 million were used worldwide. Table packs for soft margarines and pate rapidly became popular in Scandinavia and are now used in the rest of Europe, the USA and Japan.

Even Iceland, although having no packaging exports to offer, may be worth a look to get some idea of future trends. Already this country, with a population of only 250,000, consumes more milk cartons per head than anywhere else in the world, and more plastic packaging is used by each person than in any other country.

Cekaline containers from Esseltepac have replaced more expensive metal and composite cans in two recent installations in *Sweden* and appear to be growing in acceptance by the public.

Marabou, Sweden's largest chocolate manufacturer, is now using a 500 gm Cekaline container for its O'boy cocoa powder in place of a composite can. The pack has an injection molded resealable lid and the reduction in packaging costs is allowing the company to sell the 500 gm pack for the same price as the previous pack which hold 450 gm.

The other installation is for Sweden's premier coffee brand, Classic, previously packed in a metal can with a ring-pull lid. The new gold and brown board pack has a vacuum formed reclosable lid and this pack has the contents vacuum packed to retain the freshness.

Cekaline is a development of Esseltepac's successful Ceka Hermetet lined cartons. The manufacturing technique, which involves the forming of a liner from a roll of material and sealing it into a board outer blank, allows cheap white lined chipboard grades to be used since the board is not in con-

tact with the product and is hidden by the liner on the inside, while the printing is carried out on the outer lined face. This means a thick board which gives the unit a solid feel can be used.

The liner material is formed into a pouch on the machine, this pouch squared up and placed into an erected blank. It is then sealed into the blank with hot melt and the top edges of the blank turned over to hold it in place. Filling, and if required evacuating, the air from the liner, is carried out from the bottom of the pack before the bottom flaps are sealed shut.

Lids can be made in board or plastics in a wide range of styles including a new hinged lid recently developed for larger packs. It is molded in one piece and has a rim which is glued to the top edge to provide added visibility.

The heatseal wrapping machine for ice-cream bars built by *Brodrene Gram A/Sasan (Denmark)* accessory to their automatic ice-bar freezers has been so successfully accepted that they have now added a new multi-line machine, the HSW-M.

This will wrap any type of bar in any heat sealable material, automatically, using photoelectric equipment for the registration of printed panels on the product. There are two models available, handling respectively, 17 and 25 parallel product lines and able to deal effectively with bars of chocolate, marzipan loaves, slabs of liquorice, biscuits and similar products.

Both versions are easily adapted to fully automatic production lines, it is said, the careful handling needed with delicate products being achieved by arranging that the goods are placed directly on the wrapping material without being touched by hand. The wrapping material is used economically and the machines can have a conveyor taking their output directly to one or more carton-ing stations.

Tapered aluminum cans with full-aperture ring-pull lids, supplied neatly nested together with a simple but fast machine that separates them and delivers them to the filling machines, are now providing fish packers in many parts of the world with a means of making more efficient use of their often limited resources reports *Noblikk-Sannen A/S (Norway)*. The cans do, of course, also ensure a much higher standard of consumer convenience than was previously possible.

Nested together, the tapered cans save storage space and handling costs, reports *Noblikk-Sannen*, who offers fish cannery anywhere a full range of additional services such as test packaging, recipe data, factory layouts, performance testing, even special equipment design, artwork and market intelligence.

An automatic vacuumizing and gassing line for canned powder products is one of the most recent developments from a Danish manufacturer of food processing machinery (*Jorgensen Food Engineering*).

This equipment is primarily aimed at packers of milk powder and can handle cans holding from one to five pounds of powder at speeds from 60 to 24 cans per minute.

Other equipment manufactured by Jorgensen includes complete transport lines and canning equipment for meat products, vegetables, berries and fish, and they can operate with tinfoil, aluminum or glass containers.

The lids supplied with plastics buckets and tubs by *Holmiplast (Denmark)* are claimed to be completely liquidproof and, though they cannot easily be knocked off accidentally in transit, they are said to be easy to open and to replace.

They have been developed for the firm's new lightweight 500, 700 and 1,000 ml. buckets, supplied for use with virtually any food or chemical liquid product.

Holmia make blow-molded, as well as, injection-molded packs and have recently introduced multi-layer plastic bottles, produced by coextrusion, that make it possible to tailor the packages to the precise needs of any commodity and still maintain the utmost economy. Multilayer bottles can be made with various surface finishes, including brilliant colors all over or in bands, and apart from the fact that they weigh less than glass or metal containers they are invariably stronger than bottles made from a single material.

Multilayer bottles do cost more, in some cases as much as 40 percent above that of a conventional PVC bottle. This suggests that their use is best considered when high standards of quality, and special barrier properties are needed. Tables are available to explain the barrier properties that can be achieved by combining low-density polyethylene with other plastics and an intermediate adhesive layer.

Holmia's machinery advisory service led to the development of plastics bottle unscrambling machines with from three to twelve tracks and handling from 4,000 to 12,000 bottles an hour. Though intended primarily for round bottles units can be built to deal with rectangular and even triangular containers. A point of special interest is that these machines can be switched to another bottle size quickly.

BAG-IN-BOX GROWS (U.K.)

Interest is increasing on the use of the bag-in-box

concept for many different liquids. Wine appears to be of major interest in the U.S. with several large and many smaller wineries examining this fairly new packaging concept.

Introduced in Australia, the continuing popularity of the bag-in-box system for wine has been further reinforced by the appearance of the Moussac Wine Cask range in the Liqui-Box system from Corrugated Products. The range which includes Liebfraumilch wine (very sweet) and two French table wines by R&C Vintners, the U.K. wine division of Reckitt and Colman, through all grocery outlets, multiple grocers and wholesalers has been well-received.

R&C Vintners says it has been evaluating the market for bag-in-box for some time and finally chose the Liqui-Box system from Corrugated Products who has also supplied a filling machine, the three liter capacity metallized bags and the cartons.

Both the U.K. and U.S. fully anticipate that the bag-in-box will capture at least 40 percent of the large-container wine market by 1990.

CANS AND BOTTLES AND BEER (Continued)

Approximately 50% of U.S. adults drink beer and, of this group, 65% are males. So, while the number of females drinking beer continues to grow, the market is still dominated by men. The types of programs used to advertise beer certainly emphasizes this.

From a geographic standpoint it is also interesting to note that 10 states account for 56% of the beer industry total. These are: California, New York, Pennsylvania, Texas, Wisconsin, Illinois, Ohio, New Jersey, Michigan, and Florida.

Per capita consumption of beer in these 10 states is about 26 gallons, whereas the national average is around 24 gallons.

What can we expect in the 1980's. For an insight into this period a review of demographic and social trends is required. First, let's examine what is happening in terms of the adult population in our country.

For the first time in quite a while we see a decided decrease in the prime age target group of 18-24 and a significant increase in the 35-44 group. The implications of this will be covered later.

Let's now examine the special and supplemental markets of the U.S. population. It is obvious the black, hispanic and senior citizen segments have to

be contended with as will working women. During a Yankelovich study 88% of those interviewed approved of childlessness, 79% approved of vacations without children and 45% approved separate husband/wife vacations. The prediction is there will be a continuation of these lifestyles reflecting in: (1) smaller families, (2) single member households, (3) less permanent households, and (4) defocus on homemaker role.

There will be new targets and new users. More willingness and openness to try new things. We can expect less brand loyalties and smaller shares.

Forecasted growth rates for the beer industry for the next 10 years are 2-3% which is about three times the growth of the U.S. population. These forecasts utilize quantitative input i.e., population, income, etc., but do not directly reflect qualitative inputs such as social trends, women's movements and the like.

These qualitative factors net out positively for the beer industry and growth rates may exceed the 2-3% forecast. The positive factors are: (1) the "fit" between beer and the full, rich life values and away-from-home pursuits, (2) greater usage of beer among women. The social stigma of beer drinking among women will continue to diminish, and (3) overall trends toward lightness and moderation favor beer over distilled spirits.

Somewhat offsetting are these negative factors.

(1) Increasing trend to "elitism" may help super-premium/import brands but may hurt the total beer category because beer is not seen as an "elite" beverage. Wine and distilled spirits may benefit.

(2) There is increasing concern about alcoholism and new legislation is being proposed such as: labeling the amount of alcohol on the package, higher alcohol taxes to fund rehabilitation programs, restrictions on advertising, particularly TV, and potential warning labels.

(3) Also still very much alive is the continuing attempt to legislate packaging such as container deposits and banning pop tops. Since 1969 there have been over 2,100 container bills introduced in state legislatures. As of June 1, 1981, 24 states have enacted some sort of beverage container law. In 1981, a total of 196 container bills were introduced (through May, 1981).

(To be continued)

From: A paper presented by J. A. Ciszewski Jos. Schlitz Brewing Co. entitled — *The Beer Market*, Philadelphia PACKINFO (1981).



